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ABSTRACT

An action research project described a program for expanding multiple intelligences to increase reading comprehension in both English and math. The targeted population consisted of ninth, tenth, and eleventh grade students located in a south suburb of Chicago, Illinois. The problem of reading comprehension was documented through data revealing large number of students unable to meet the demands of the Illinois Goal Assessment Program (IGAP), local assessments, and classroom activities. Probable cause data revealed students living in low economic conditions, high mobility rates, natural attrition, and poor attendance. The data also indicated students' poor social skills and lack of self-discipline. Additionally, the data revealed a lack of teacher training in multiple intelligences and innovative teaching strategies. A review of solution strategies and analysis of the problem setting resulted in the selection of two major categories of intervention: incorporation of multiple intelligence strategies combined with cooperative learning techniques in English and math units, and the implementation of weekly student observation sheets and anecdotal reflections. Post intervention data indicated an increase in student reading comprehension skills in English and math, and an increase in student learning expectations. (Contains 18 references, and five tables and seven figures of data. Appendixes comprise more than half of the paper and contain survey instruments, journal entries, reading strategies, numerous class and learning activities, cooperative lesson plans, and anecdotal reports.) (RS)

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ED 420 839

USING MULTILPLE INTELLIGENCES TO INCREASE READING COMPREHENSION IN ENGLISH AND MATH

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An Action Research Project Submitted to the Graduate Faculty of the School of Education in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Teaching and Leadership

Saint Xavier University & IRI/Skylight
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ABSTRACT

This report describes a program for expanding multiple intelligences in order to increase reading comprehension in both English and math. The targeted population consists of ninth, tenth, and eleventh grade students located in a south suburb of Chicago, Illinois. The problem of reading comprehension has been documented through data revealing large number of students unable to meet the demands of the IGAP, local assessments, and classroom activities.

Probable cause data revealed students living in low economic conditions, high mobility rates, natural attrition, and poor attendance. The data also indicated students' poor social skills and lack of self-discipline. Additionally, the data revealed a lack of teacher training in multiple intelligences and innovative teaching strategies.

A review of solution strategies and analysis of the problem setting resulted in the selection of two major categories of intervention: incorporation of multiple intelligence strategies combined with cooperative learning techniques in English and math units and the implementation of weekly student observation sheets and anecdotal reflections.

Post intervention data indicated an increase in student reading comprehension skills in English and math, and an increase in student learning expectations.

CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

The students of the targeted ninth, tenth, and eleventh grades are not exhibiting the reading comprehension skills needed to be successful in English and math. Evidence for the existence of this particular problem not only exists in the IGAP scores, but it also exists profoundly in the daily work of the classroom.

After carefully analyzing the most recent scores of Robinson High School on the Illinois Goals Assessment Program (IGAP), most teachers are concerned about the results, primarily in the fields of English and mathematics. According to the results, 60% of Robinson students failed to meet the state goals for reading, and 54% of the students did not meet the requirements for math. No more than 6% of the students exceeded the state goals in either field.

Immediate Problem Context

According to the 1996 School Report Card, Robinson's total enrollment is 2,358 students, 50.3% of whom come from low-income families. The population is composed of the following: 4.3% white, 92.4% black, 2.7% Hispanic, .6% Asian, and .1% Native American.

Robinson suffers from a huge attendance problem which undoubtedly adds to the low assessment scores. It has a student mobility rate of 32.9% and a chronic truancy rate of 5.2% (110 students), both of which nearly double the

state averages. Only 56.1% of its students graduate after four years of high school, not to mention the fact that only 27.4% of last years twelfth graders (110 students) took the ACT. It is also very unfortunate that the number of chronic truants equals the number of students who took the ACT.

There are over 150 teachers at Robinson High School. This would make the average class size under 20 students per teacher. More than half of the faculty possess a Master's Degree and have been teaching longer than fifteen years.

Robinson is the oldest of three high schools in the district and consists of six separate structures in which students attend class. The campus encompasses approximately four square blocks which also includes a driving education range, two football fields, several baseball diamonds, and six tennis courts. For safety reasons, an underground tunnel was built linking the main building to the physical education facilities. Students use this tunnel daily.

The basic reading program at Robinson is only offered to low-achieving freshman. No other specific reading programs exist. The accelerated learning program and learning strategies are used to supplement the regular freshman curriculum.

In conclusion, Robinson High School's district serves a socio-economically, culturally, and academically diverse student population. A significant number of students fall into academically at-risk groups due to low income or high mobility, and the attendance rate is slightly below the state average. Fluctuating enrollment and limited financial resources have impacted the educational program in the district, but the average class size and teacher-pupil ratio is consistent with the state average. The school district has an experienced staff.

The Surrounding Community

According to the 1993 North Central School and Community Report, the district services 7,069 students and employs 452 teachers. The pupil-administrative ratio is 504.9:1, while the pupil-teacher ratio is 16.4:1. In the district population, 36.8% are students from families receiving public aid, living in institutions for neglected or delinquent children, being supported in foster homes with public funds, or eligible to receive free or reduced-price lunches.

Robinson's district services sixteen different communities, seven of which are serviced directly by Robinson High School. The populations of those seven communities range from 1,570 to 29,771 people. The median home values range from $42,800 to $68,600. The median family incomes start at $15,363 rising only to $28,057 in certain areas. For the most part, both the home values and family incomes fall far below the county and state averages. Similarly, the community's unemployment rate (10.9% according to a 1991 poll) is 3.7% higher than both the county and state averages.

The sixteen communities serviced by the district span an interesting demographic range. While the area once was comprised of primarily white, blue-collar families, it has experienced a change in makeup over the last three decades. There have been challenges such as major industries closing down or leaving the area, gang rioting, and gang infiltration. It is now an industrially challenged area with pockets of economic devastation. The area is comprised of primarily black, low-income families with 16-17% other (white, Hispanic, Native American, Asian/Pacific Islander). There are several strong Fundamental Christian, Catholic, and Protestant churches within the community. While the community has changed dramatically, the district has maintained an operating expenditure of $9,204 per pupil.

National Context of the Problem

The issue of reading comprehension has plagued educators for many generations, the idea that students need to look past the scripted words in front of them and be able to somehow empathize with the text. Students need to enjoy reading about every subject possible in order to fully reach their potentials in life. But many students are not reading and seem to have little desire for it. Some educators might say that this situation is just a sign of the times; however, R.W.Cowden (1994, p. 25), an educational philosopher, wrote nearly seventy-five years ago:

> If only those students who take delight in reading were able to be found in the English classroom, and if they were there in numbers so small as to permit of individual work on the part of the instructor, rare moments might come when there would be between teacher and student such a perfect union of sympathy in a common interest that the vision and imagination of the one would be the inspiration of the other. This condition, however, can come only in the distant future.

Surely, Cowden's vision could be applied to all areas of education since reading is ultimately interdisciplinary. The future he once spoke of is now emerging, mainly within the confines of the constructivist philosophy of education within the "student-centered" classroom.

A "student-centered" classroom is one in which the teacher must cater to all the diverse learning pallets of its students. In order to successfully do this, the teacher will certainly need to embrace Howard Gardner's theory of multiple

intelligences. In his essay, *"Multiple Intelligences as a Catalyst"* (1995, pp. 16-18), Gardner asserts that "focusing on the child, an MI approach, entails a careful description of what the child is like intellectually and the planning of an education program appropriate for that child." Thus, teachers need to develop pre and post-reading strategies that will appeal to some, and eventually to all, of Gardner's seven intelligences which will be defined in depth later in Chapter 3. If successful, teachers will notice significant changes in their students' reading behaviors, changes for the better. Gardner refers to these changes as "deep" applications which teach *to* the students, not *at* the students. In his essay, Gardner goes on to warn educators that "if applications remain at the superficial level, then educational progress will be limited." In other words, if students are not taught in ways successful for and meaningful to them, then learning will be held to a minimum, if it occurs at all.

Fortunately, most students are learning successfully in the classroom, and most educators do focus their instruction towards the particular needs of each student they teach. But it often seems that most of the appreciated, documented results are seen in schools with consistently high test scores and much more stable learning environments. Unfortunately, there are many other schools with great concerns hindering student learning. Robinson is such a school, and the following chapter will illustrate the causes that present its faculty with such an "at-risk" situation (previously mentioned statistics support this). Therefore, it is imperative that this study be done to raise the learning expectations of Robinson's educators, students, and surrounding community.

In a similar study, Janet L. Bergman and Ted Schuder (1993, pp. 53-55) said this about learning expectations:

> We were having difficulty delivering meaning-centered reading instruction to our lowest achievers. In traditional classrooms, the poorest readers still spent most of their time on isolated, low-level skills in boring textbooks or working on ditto sheets. They rarely had opportunities to practice reading as their successful peers did. Low expectations were breeding low performance.

Students read better when they expect themselves to do so, and it is up to the teacher to access their individual expectations through their multiple intelligences.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

In order to document the extent of low reading comprehension skills in both math and English, a review of the 1996 I-GAP and ACT scores, an analysis of the Stanford Achievement Test (Pre): Math Applications, and an analysis of the Gates-MacGinitie Reading Comprehension Test (Pre) need to be noted. According to the I-GAP scores in Robinson High School's 1996 Report Card, 60% of the students did not meet the state goals in reading while only 6% exceeded those same goals. Similar figures in math show that 54% of the students failed to meet state standards while only 4% exceeded them. These scores are based on the fact that most of the sophomore class was required to take the test.

On the other hand, only 27% (110 students) of the senior class volunteered to take the ACT, and the average of those students' composite scores (18.2) fell nearly five points behind the state average (22.9). As a result of these and other similar scores, Robinson High School is quite near to being put on the state "watch list."

Since Robinson High tracks its students and reschedules every semester, it is impossible to research the same group of students in both math and English. Therefore, each subject area will be treated separately while analyzing comprehension scores.

The Stanford Diagnostic Pretest was given to four different sections of Algebra IA. Algebra IA is the first semester of a three-semester course designed

for those students who can be more successful if they have additional time to learn the algebraic concepts. This course is a freshman entry-level class, but these sections also include upperclassmen, who as freshmen, started in pre-algebra, general math, and basic math.

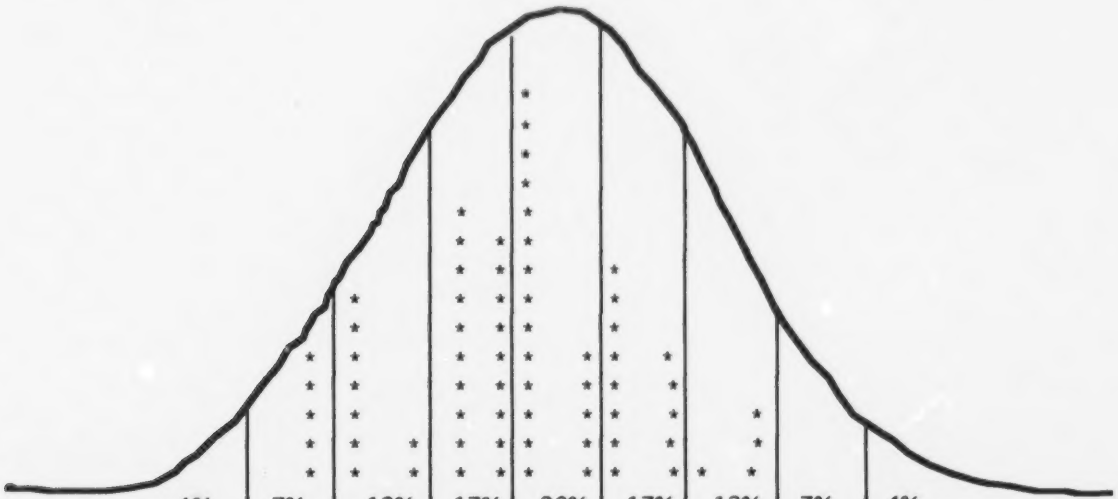
The precise test administered to these students was the Stanford Achievement Test: 8th Ed., 1991 Norms, Advanced Level, Form J, Math Applications. Because the focus of this research is improving reading comprehension in math, the students used calculators, thus eliminating computational errors while focusing on their understanding of the written questions. A summary of these scores is presented in Table 1.

Table 1 Performance on Stanford Achievement Test

Math Applications	September 5, 1997
Number of Students	Grade Equivalence
4	5
8	6
20	7
11	8
8	9
6	10
2	11
2	12
6	PHS
Total 68	

Of the sixty-eight students who took the test, nearly 63% scored below the ninth grade level, and eleven students placed above grade level. Six students achieved a "post-high school" score; however, two of those students are currently failing the Algebra IA course. Another interpretation of the math scores is shown in Table 2 where students are ranked again on a bell curve.

Table 2 Performance onMath Applications Stanford Achievement Test September 5, 1997



	4%	7%	12%	17%	20%	17%	12%	7%	4%
Stanine	1	2	3	4	5	6	7	8	9
Percentile Rank	Below 4	4-10	11-22	23-39	40-59	60-76	77-88	89-95	Above 95
NCE	1.0-10.4	13.1-23.0	24.2-33.7	34.4-44.1	44.7-54.8	55.3-64.9	65.6-74.7	75.8-84.6	86.9-99.0
	Below Average			Average			Above Average		

In Table 2, the Percentile Ranks and the Normal Curve Equivalents show that 68% of student scores were below the fiftieth percentile. Only four students scored "above average" as opposed to thirteen who fell in the "below average" category. It is interesting that one student who is producing the best results in class scored in the below average category, thus showing that reading comprehension and learning motivation are completely separate issues and should be treated as such.

The Gates-MacGinitie Reading Comprehension Test Form L for ninth grade and Form K for tenth and eleventh grades was administered to six sections of English: two English I Acceleration classes, two English II level 4 classes, and two English III Level 4 classes. The English I Acceleration classes consist of in-coming freshmen who read well below the ninth grade level. These students are placed on a special five-year graduation plan which gives them an extra year to "accelerate" their learning to grade level standards. The English II Level 4 students are primarily sophomores who supposedly read at, or near, the tenth grade level. And finally, the English III Level 4 students are primarily juniors who supposedly read at, or near, the eleventh grade level. However, a careful examination of Table 3 shows that many students read far below their grade levels.

In the freshman class, 43 students took the comprehension test. According to figure three, 88.3% of those students are reading below the sixth grade level, and nearly 40% of the scores fall below the fourth grade level. The sophomores and juniors who are tracked in "higher-ability classes" scored similarly on the Gates-MacGinitie. Approximately 42% of the sophomores are reading below grade level, and 35.4% fail to reach the ninth grade level. Finally, 57% of the juniors are reading below grade level with nearly 29% scoring below high school standards.

Table 3 Results of Gates-MacGinitie Reading Comprehension Test

FRESHMAN		SOPHOMORES		JUNIORS	
# OF STUDENTS	GRADE LEVEL	#OF STUDENTS	GRADE LEVEL	# OF STUDENTS	GRADE LEVEL
3	1	2	2	1	2
6	2	4	5	1	4
8	3	1	6	3	5
13	4	7	7	1	6
8	5	3	8	5	7
4	7	3	9	3	8
1	9	9	10	9	9
43		3	11	5	10
		5	12	6	11
		11	PHS	3	12
		48		12	PHS
				49	

To sum up the evidence supporting the chronic reading comprehension problem at Robinson High School, the words of one of its teachers lend themselves effectively: "The students are like caged animals in that, somehow along the way, the system broke their spirit in immeasurable and irreparable ways.... Yet, the situation isn't a lost cause unless teachers stop searching for new ways to teach." Hopefully, some of the multiple intelligence strategies used in this research can help guide some teachers in their search.

Probable Causes

After examining the many probable causes of low reading comprehension skills at Robinson High School, educators would agree that the following seven causes can not be overlooked: socioeconomic background, parental involvement, attendance, teen pregnancy, discipline, student motivation, and lack of effective teaching strategies. Many students are affected by some of these causes while others are effected by all of them.

As mentioned earlier in Chapter One, Robinson's district services sixteen different communities with family incomes starting at $15,363 and rising only to $28,057 per year. These figures fall far below the county and state averages. According to a 1991 poll, 10.9% of the community was unemployed. If another census were taken today, that number would probably be significantly higher. This means that many of Robinson's students come from extremely limited learning environments which often produce limited life-long learning motivation. Many students fail to see a future that is more bountiful than their present existence. Thus, they feel that education has little to offer them.

Parental involvement is another hindrance to reading comprehension. According to a 1992 study, "Voices from the Classroom", conducted by Dylnan Learning Centers and the National Association of High School Principals, parental involvement is the most significant problem in education today. The study asserts that "like many teachers frustrated by the lack of parental involvement in the education process, our number one priority in public school education is to reinvolve all parents in the education of their children" (Johns,1992, pp.16-17). Robinson's most recent open house statistics support this; of the 243 students involved in this research, only 26 parents (less than 11%) attended. All parents were informed by both their children and mail correspondence, and the open house was held after the dinner hour.

Obviously, Robinson is not unique. Approximately eight years ago, several Midwestern teachers, principals, and superintendents were asked to rate some barriers to learning that their students might face. "Students unstable family life" and "lack of parent involvement" received the highest average ratings of any potential option (Foster,1989, p.16).

Poor attendance and teen pregnancy also plagues reading achievement in the classroom. Robinson suffers from a huge attendance problem. According to the 1996 School Report Card, Robinson has a 32.9% mobility rate and a chronic truancy rate of 5.2% Just over half of Robinson's students graduate after four years of high school. According to the National Commission on Excellence in Education (1983), one out of every four students drops out before graduation. A common trend amongst most dropouts is that they leave because they do not have much success in school, and they do not like it (Jackson,1983, p.3). Nearly two thousand classes were failed last year due to poor attendance at Robinson. Admittedly, Robinson's new "four unexcused absences and you're out" policy is tough; however, life is also tough without an education. Unfortunately, many of Robinson's younger students learn their attendance habits from older students. Janine Bempechat and Herbert Ginsburg suggest that "many students are pressured by peers to sabotage their own education by deliberately performing badly and not attending class" (1989, p. 5).

Robinson's attendance problem cannot be fully examined without discussing the issue of teen pregnancy. According to the school nursing staff, seventy-five pregnancies were reported last year: ten freshman, eleven sophomores, twenty-nine juniors, twenty-three seniors, and two unknown. These numbers do not reflect abortions, miscarriages, or unreported incidents. Mary Guess Flamer and Elaine P. Davis found that many teen pregnancies

occur because of "unmet psychological needs", and low-achievers are prime candidates for adolescent pregnancy because they experience little, if any, success in the classroom. Flamer and Davis also assert that "all children need to experience success . . . in its absence, they may turn to alternative indicators of success, the symbols of adult status" (1990, p. 25). Consequently, these young girls either struggle endlessly for their diplomas or disappear completely from school altogether.

Discipline and student motivation are certainly probable causes for low reading comprehension skills as well. Although the exact numbers cannot be found, or possibly divulged, it can safely be said that thousands of detentions, hundreds of suspensions, dozens of behavioral school transfers, and dozens of expulsions interrupt the classrooms of Robinson. Admittedly, many of these incidents are due to gang affiliation, lack of parental involvement, lack of effective discipline codes, and lack of success in the classroom. None the less, they exist and definitely effect reading comprehension skills of both the children involved and those surrounding them. Disruptive behavior is the number one cause of instructional interruption at Robinson and is undoubtedly related to lack of student motivation. "Students often misbehave for fun to keep school from being boring, trying to get around the rules as a sport, and detention as the penalty for getting caught" (1996, pp. 6-10) affirms Sue Thorson, educator and author. So instead of looking for better ways to learn, they seek negative attention from their peers, thus destroy the learning process of the entire classroom.

Finally, the teachers themselves are a probable cause for low reading comprehension skills among students. In a survey (Appendix A) given to the entire teaching staff of Robinson High School (240 teachers), sixty-seven were returned. Of those sixty-seven teachers, most feel that students possess

multiple intelligences which create unique learning styles. However, several of the teachers also believe that many of their present strategies do not reach those individual learning styles and that the teachers themselves are not the right "personality type" for many of the contemporary strategies. There are also many teachers who do not offer alternative ways of doing assignments, probably for fear of not being able to assess the students properly. Many teachers are quite comfortable with "pen and paper tests" because they are not familiar with alternative means of assessment. Similarly, Howard Gardner and Mindy Kornhaber state that "most schools miss opportunities to support the development of excellence because their curriculum assessment and pedagogy neglect all but linguistic and logical-mathematical competencies" (1993, p. 73-74). In other words, teaching to the local and state tests does not teach the students to teach themselves; it does not encompass the students' multiple intelligences.

In conclusion, there are many probable causes for the low reading comprehension scores at Robinson High School. Too many students are not coming to school; and when they do come, they are often unmotivated and uncooperative. Too many parents are not getting involved in their children's educations, not reading to them, and not touching base with their teachers. Too many teachers are not responding to their students' learning needs, particularly those concerning the multiple intelligences, especially those that teach the students to teach themselves.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

In a recent article, Joseph A. Gould (1996, p. 14) affirms that "each of us is gifted with a unique potential that defines our destiny." Although Gould is speaking of learning in his work, his philosophy can certainly be applied to teaching as well. Each teacher is gifted with a unique teaching potential that defines his or her destiny in the classroom. Thus, teachers must first identify, evaluate, and strengthen their own weaknesses when teaching to the multiple intelligences before students can be expected to do the same. Proper training in this area is undoubtedly necessary.

Then teachers can begin facilitating a multiple intelligence (MI) atmosphere for their students.

In order to properly facilitate an MI atmosphere, certain steps need to be taken by both teachers and students. Ellen Weber (1996, p. 81) has devised five steps which will be referred to later in this chapter. First, teachers need to collaborate with one another in order to consistently reinforce a proper learning atmosphere for students. Second, teachers must brainstorm the topic of multiple intelligences with their students in order to assess student awareness. Third, the input of parents should be invited into the classroom. Fourth, teachers must consult with their students about learning strengths and weaknesses. Finally, MI theory and practice should be introduced in the learning environment.

It is also important that proper behavior be discussed prior to following

this plan of action, and in the case of Robinson High School, the consequences of improper behavior as well (Chapter 2). "Students have a right to learn; teachers have a right to teach" (Russian, 1995, pp. 96-98). Any behavior that hinders those two rights must either be neutralized or removed from the MI atmosphere until proper social behavior can be attained. However, well-developed MI strategies should increase the students' desires to learn while hopefully decreasing their off-task behavior.

Step One: Teacher Collaboration. Teachers must depend on each other in order to better the MI atmosphere in their classrooms. They must share their strengths and weaknesses while at the same time develop new ideas. They must also develop a common vocabulary by which they can significantly discuss the issue of MI. Common training would aid this process. For example, the teachers/researchers involved in this project are all pursuing their master's degrees in teaching and leadership. They have been trained in effective MI strategies and authentic ways of assessing student transfer of knowledge. They also conveniently work at the same school which provides ample opportunities to meet with one another.

Step Two: Brainstorming with Students. Ellen Weber feels that it is imperative that teachers discuss the issue of learning style with their students so that the general awareness of the topic can be discussed. By doing this, students can begin to discover their own learning styles and begin to focus themselves towards the goal of higher-achievement in an MI atmosphere. In a project done in 1995 researchers, S. G. Allred and F. K. Holiday, found that "discovering learning style is important as reflected in a 37% difference between high-achieving students and low-achieving students" (pp. 82-89). In other words, students who are aware of their unique learning styles tend to be more successful learners with successful intelligences.

Another educator, Robert J. Sternburg (1996, pp. 19-20), probes into what a successful intelligence really is: "Successful intelligence is the acquisition and use of what you need to succeed in a particular environment." Sternburg goes on to say that this can not always be specifically taught or verbalized. Therefore, it is extremely important that the students become directly involved in the process of developing their own multiple intelligences. And a good start would be brainstorming the idea with the students.

Step Three: Inviting Parent Suggestions. In many cases, parents are more than willing to discuss their childrens' learning styles openly with teachers. Therefore, it is necessary that teachers try to facilitate this by allowing time for face-to-face conferences, making phone calls, and possibly even developing a survey. However, a quick glance at the results of Robinson High School's parent conferences as already discussed in Chapter 2 will show that teachers can not always rely heavily on parental involvement. So they must get what they can from the parents and move on to step four.

Step Four: Consulting Students. In this step Weber asserts the teacher and students must consult one another in order to develop learning objectives, determine strengths and weaknesses, and consider the characteristics of someone possessing highly successful, multiple intelligences. When developing learning objectives in the classroom, the students must be directly involved because each objective does not necessarily pertain to each student. E. Sawyer (1995, pp. 85-92) asserts that "we need to stop treating students as if they are all alike when we know that differences exist . . . they need structure, but also choices." These choices develop a sort of "learning security" for the students, not to mention direct responsibility. Also, by permitting the learning objectives to be cooperatively developed, teachers allow students to demonstrate strengths and interests.

Identifying students' strengths and weaknesses in learning style is important to teachers because it helps in developing pertinent lesson designs, assessing process as well as progress, and designating roles for cooperative learning activities. This strategy also allows students to assess themselves longitudinally by setting learning goals based on their own MI weaknesses. It is also very important that a MI vocabulary be established at this point. Howard Gardner's seven intelligences should certainly be defined, discussed, and analyzed cooperatively.

For many students, this MI atmosphere will seem rather intangible at first; so it might be necessary to provide several examples of successful intelligences. Robert Sternburg (1996, pp. 19-20) goes on in his article to list seven "characteristics of people high in successful intelligence:"

1. They know their strengths and weaknesses and how to make the most of their strengths while finding ways to correct or at least to compensate for their weaknesses.

2. They are goal setters: Some are visionaries, but all know they need to work to achieve.

3. They are highly motivated, but they know when to quit and when to persevere.

4. They follow through. They make fewer promises, but they deliver what they promise.

5. They are high in self-efficacy, not necessarily high in self-esteem by knowing that they can get the job done.

6. They figure out who owns what problems and take responsibility for the problems they own.

7. They can translate thought into action, real-world accomplishments, not achievement test results.

It seems that these characteristics can not possibly be attained without strengthening weak intelligences and reinforcing strong ones. These characteristics can be used as a sort of guideline for teachers and students when analyzing their own multiple intelligences. They can be the first step in developing the two intelligences most crucial to an MI atmosphere, intrapersonal and interpersonal. Thomas R. Hoerr (1995) agrees when he asserts that "while we value all the intelligences, we believe that the personal intelligences, intrapersonal and interpersonal, are the most important . . . the ability to work with others and know what you do well, and not do well, is critical" (p. 40). At this point, the MI atmosphere should be in place, and the classroom is now ready for multiple intelligence practice.

Step Five: Introduction of Theory and Practice. Not only should the students be involved in producing learning objectives, but they should also be metacognitvely aware of the intelligences being reinforced by each lesson. They should also be allowed various ways of showing their progress in class, not via verbal/linguistic only. Thomas R. Hoerr (1995) again confirms this when he says, "To (authentically) assess students, we need to be sure we are giving them a variety of ways to show this knowledge, not just ways to show how well they can write" (p. 38).

The rest of this chapter illustrates an example of how multiple intelligences strategies can be used longitudinally in order to affect, in this case, the reading comprehension scores at Robinson High School. Most of these strategies are used as enrichment to and assessment of assigned readings in both English and math. The reader should be aware that steps one through four have already been accomplished prior to the following implementation and analysis of MI research.

Project Objectives and Processes

As a result of the increased instructional emphasis on multiple intelligences, during the period of September 1997 to January 1998, the targeted students of Robinson High School will increase reading comprehension in English and math, as measured by standardized tests, teacher/student observation, teacher/student reflection, and grade and attendance records.

As a result of the increased instructional emphasis on multiple intelligences, during the period of September 1997 to January 1998, the targeted students of Robinson High School will increase their own learning expectations, as measured by student observation and reflection.

In order to accomplish the terminal objective, the following processes are necessary:

1. Curricular materials that foster student interest will be developed.
2. A series of learning activities that encourage students to develop their multiple intelligences.
3. A survey will be created and administered to teachers to identify their knowledge of multiple intelligences.
4. Students will analyze their various intelligences.
5. Within the lesson plans, time will be scheduled to include cooperative learning activities.
6. Students will complete assigned journal work. These journal entries will communicate to the teacher both student opinions and their level of engagement.
7. Metacognitive activities will be collected or developed.
8. A series of comprehension tests will be administered to assess student performance.
9. Rubrics of student success will be developed based on teacher observation.

10. Grade and attendance records will be monitored.
11. Teacher anecdotal journals will be maintained.
12. Student portfolios will be available for evaluation.

Project Action Plan

I. Assessing Student Reading Comprehension
   A. English - Gates-MacGinitie
      1. Pre
      2. Post
   B. Math - Stanford Diagnostic
      1. Pre
      2. Post

II. Surveying Teachers and Students
   A. Teachers
      1. Knowledge
      2. Ideas
      3. Opinions
   B. Students
      1. Self-assessment
      2. Analyze individual patterns.

III. Developing Classroom Climate
   A. Learning student names
   B. Making classroom rules
   C. Paired interview to gauge background knowledge

IV. Developing Classroom Procedures

A. Introduction of student journals

B. Introduction of graphic organizers

1. Teacher made

2. Established models

C. Introduction of rubrics

D. Discussion and practices of social skills

1. Individual

2. Cooperative

V. Varying Instructional Methodologies

A. Cooperative learning (Fogarty and Bellanca, 1993)

B. Think, pair, share (Fogarty and Bellanca, 1993)

C. Round robin reading

D. Pre and post reading strategies

E. Teaching to the multiple intelligences

VI. Encouraging Authentic Assessment

A. Rubrics (teacher observations)

B. Student portfolios

C. Student journals

D. Student questioning

E. Peer assessment (rubric)

F. Individual assessment (rubric)

G. Computer assessment (rubric)

VII. Analyzing Transfer of Comprehension

A. Written metacognitive activities

1. Reflective journals

2. Graphic organizers

3. Mrs. Potter's questions
4. Put yourself in the story

B. Oral metacognitive activities

1. Reflective questioning
2. Making connections review
3. Wrap around discussions
4. Inferencing strategies
5. Problem solving strategies

Methods of Assessment

In order to assess the effects of the intervention, the Gates-MacGinitie (English) and the Stanford Diagnostic (math application) tests will be administered. Both of these standardized tests will be given as pre and post assessments to determine student progress in reading comprehension. In addition, portfolios of student work in both subject areas will be kept throughout the intervention period. Scoring rubrics will be developed for cooperative activities, journal assessment, oral presentations, student illustrations, and various other individual and group tasks. Students will also keep reading journals as a means of assessing their personal reading growth (individual assessment rubric and peer assessment rubric). Robinson High School is also equipped with a computer lab which services the targeted groups in both English and math. Progress reports can be obtained on a daily basis to monitor student growth. It should also be noted that informal assessments will be made based on class discussion reflected in teacher anecdotes because ". . .we don't have to teach them in the same way. We don't have to assess everybody the same way" (Gardner, 1998, pp. 50-51).

CHAPTER 4

PROJECT RESULTS

Historical Descriptions of the Intervention

As previously stated in Chapter 1, 60% of Robinson's students failed to meet the state goals for reading, and 54% of the students did not meet the requirement for math. This research contends that a deficiency in reading comprehension skills among Robinson students poses much of the problem in both areas. The students of the targeted ninth, tenth, and eleventh grades are not exhibiting the reading comprehension skills needed to be successful in English and math. Evidence for the existence of this particular problem not only exists in the state IGAP scores, but it also exists in the daily work of the students. Thus, an increased instructional emphasis on multiple intelligences was implemented to affect the desired changes not only in the area of reading comprehension but also in the students' learning expectations as well.

Chapter 2 already illustrated the fact that Robinson High School tracks its students and reschedules every semester, so it was impossible to research the same group of students in both fields of study. Therefore, each subject area will be treated separately while historically describing the intervention and presenting the results.

The math portion of this research was implemented into a freshman entry-level course, Algebra 1A. This was the first semester of a three semester class, designed for those students who can be more successful if given more time to learn the algebraic concepts. This group also included some upperclassmen who, as freshman, started in pre-algebra, general math, or basic

math.

The interventions used in mathematics employed the multiple intelligences to effect an increase in reading comprehension and learning expectations (Appendix B). A summary of these interventions is presented in Figure 1 which should be referred to throughout the mathematics portion of this section.

INTERVENTION	TARGETED INTELLIGENCE						
	V/L	L/M	V/S	B/K	M/R	INTER	INTRA
Journaling	●	●	●				●
QAR Reading Strategy	●	●	●			●	
Round Robin Reading	●	●	●				
Music		●			●		●
Word Problem Unit With Graphic Organizer	●	●	●			●	
Cooperative Learning	●	●	●	●			●
Math Computer Lab	●	●	●	●			●
Starter Exercises	●		●	●	●	●	●

Figure 1. Summary of Mathematics Interventions

Early in the semester, personal goal setting was done in a journal entry. Journal entries were then used on a regular basis in Algebra 1A, as individual and cooperative assignments. A representative sampling of journal entries may be found in the appendix (Appendix C). At about the same time, positive classroom behaviors were established and agreed upon by each of the targeted math classes while using the cooperative learning format for the first time. Shortly after, the QAR reading strategy, along with round robin reading, as introduced in conjunction with the math curriculum as tools for the students

to use when reading their math books. A complete explanation of the QAR reading strategy can be found in Appendix D.

The use of music was also introduced early on in the semester as an energizer to promote concentration and to calm the students. Music was used on a regular basis throughout the semester.

In the fourth week of the semester, the targeted students began the first portion of a reoccurring word problem unit. Here, they were introduced to the graphic organizer that they would be using to solve word problems. This week was somewhat limited to teacher modeling, whole group guided practice, and individual practice. During the following week, solving word problems with the graphic organizer was implemented with cooperative learning. Cooperative learning continued to be used, when appropriate, in all areas of the Algebra 1A curriculum. It should also be noted that base groups were never established because of discipline, attendance, and mobility (Chapters 1 and 2). Therefore, the cooperative activities were mostly limited to one period assignments. A typical cooperative lesson plan using the graphic organizer can be located in Appendix E.

The targeted students also pursued a regular schedule in the math computer lab. The students were in the lab one half hour per week for the entire semester. The program paralleled the Algebra 1A curriculum. In addition, it required a great deal of reading along with higher order thinking and skills practice. A complete description of this program can be seen in Appendix F.

A series of "starter" exercises, which are part of the Brain Gym program developed by Dr. Paul Dennison, were initiated as well (Appendix G). Three specific exercises were used. The first was the Lazy-Eight, a visual/spatial exercise done to improve the students' reading in the areas of

interpreting, focusing, and comprehending. With eyes closed, students traced five sideways figure-eights with their right hands. The same exercise was then repeated with the left hand, and then with hands together. The second exercise done in this series was the Thinking Cap, which activates hearing and listening in the classroom. With index fingers and thumbs placed at the top of each earlobe, the students gently tug at the earlobes repeatedly from top to bottom five times. The third was done to music. This exercise is known as the Cross-Crawl. It activates the whole brain and body for integrated learning by activating both hemispheres of the brain at once. To do this exercise, the students cross the right arm to the left side of the body as they lift the left knee towards the right side. This was followed by the left arm to the right side and right knee to the left side. This was done ten times. All three of these starter exercises were used on a daily basis for the remainder of the intervention.

The English interventions were administered to freshman, sophomore, and junior students by three separate teachers. The freshman are in two "acceleration" classes. The acceleration program is a special five-year graduation plan that gives the students an extra year to increase their learning to grade level standards. There are two sections of sophomores and two sections of juniors. These students consist primarily of young adults who supposedly read at, or near, grade level. However, Table 3 in Chapter 2 shows this not to be true to a major extent.

The interventions used in English employed the multiple intelligences to affect an increase in reading comprehension and learning expectation. A summary of these interventions is illustrated in Figure 2 and should be referred to for the remainder of this section. The reader should also note that Appendices H - NN present example lessons, activities, and assessments from

all three teachers dealing with the following interventions. Specifically mentioning each one within the text would be much too cumbersome for the reader.

INTERVENTION	CLASS	TARGETED INTELLIGENCE						
		V/L	L/M	V/S	B/K	M/R	INTER	INTRA
KWL	Junior	●		●			●	●
Starter Exercises	Freshman Sophomore	●		●	●	●	●	●
Student Interviews	All	●			●		●	●
Developing Class Rules	Sophomore Junior	●		●			●	●
Student Journals	Sophomore Junior	●		●				●
Graphic Organizers	All	●	●	●				
Social Skill Orientation	All	●					●	
Cooperative Learning	All	●	●	●	●		●	●
Think, Pair, Share	All	●			●		●	●
Round Robin Reading	Freshman Sophomore	●		●			●	
Music (Interspersed)	All		●			●		
Mrs. Potter's Questions	Sophomore Junior	●					●	●
Role Playing	Freshman Sophomore	●		●	●		●	●
Reflective Questions (Oral)	Sophomore Junior	●					●	●
Wrap Around Discussion	Sophomore Junior	●					●	●
Inferencing (Oral)	All	●	●	●				●
Problem Solving	Sophomore	●	●	●			●	●
Self-Assessment (Rubrics)	All	●						●
Peer-Assessment (Rubrics)	Sophomore	●					●	
Student Portfolios	Freshman Sophomore	●	●	●				●
Computer Lab	Freshman Sophomore	●	●	●	●			●

Figure 2. Summary of English Interventions

Conducting student interviews, developing classroom rules, and initiating cooperative learning occurred early in the English intervention process. The freshman teacher pursued the interview process by having the students introduce themselves in round robin fashion. Each student said his/her name and an adjective describing him/herself beginning with the first letter of his/her name. Each consecutive student had to name everyone before him/her. The sophomores and juniors used the "I Am Bag" approach. The students filled their bags with small items that reflected their "inner-selves" and decorated the outside of the bags reflecting their "outward image." The sophomores and juniors also established classroom rules cooperatively giving students more ownership of their learning environments.

Cooperative learning was initiated at the onset of the intervention process too. At the freshman level, base groups were established for the entire semester while students sometimes formed temporary activity groups. The other grade levels limited their groups to the duration of each particular assignment. Social skill orientation was a major part of the cooperative learning process at all levels.

Reflective journaling, graphic organizers, and computer labs were ongoing processes during the semester as well. The journals started off with goal setting activities and then varied in scope throughout the semester depending on the diversity of the strategies, the diversity of the curriculums, or the specific "teachable moments" which occurred. Graphic organizers were implemented as pre and post reading/writing activities; they were also frequently used as a means of assessment. Refer to the previously mentioned Appendices H - NN. These organizers included Mind Maps, Webs Venn Diagrams, Paragraph Prewriting Grids, Character Analysis Grids, Plot Diagrams, Right Angle Graphs, etc. The computer labs were also frequently

used by the students. The freshman students worked with two separate programs; one dealing with grammar, usage, and punctuation, the other dealing specifically with comprehension which was a much more interactive experience involving headphones.

Starter exercises, music and drawing should be mentioned. The ninth and tenth grades often began class periods by "energizing" the students with up-beat music to which they often cooperatively clapped. Other starter exercises included touching three walls of the room, keeping the lights off, switching seats, and even the "Hokey Pokey" once in a while. Music was used for all three grade levels as a means of enrichment for specific activities. For example, the juniors listened to the song "Colors of the Wind" from the Walt Disney movie, Pocahantas, while identifying poetic devices and enhancing their knowledge learned in a unit on Native American literature. The freshman and sophomore teachers used music to establish particular moods for the students when reflecting of particular readings or developing creative writings in response to diverse examples of literature. The freshman, sophomore, and junior teachers all used drawing to develop visual/spatial elements of the students' learning. These came in the form of posters, diagrams, brochures, and pictographs.

An assortment of other strategies were implemented periodically. Think-Pair-Share and different inferencing strategies were used for all three grade levels. The freshman and sophomore teachers used round robin reading and role playing activities at various times. The sophomore and junior teachers spent time with Mrs. Potter's questions, KWL assignments, oral/reflective questioning techniques, wrap-around discussions, and specific problem solving assignments.

Finally, specific assessments were employed throughout the semester to

gauge students' learning. Rubrics for self-assessment were given to the students by all three teachers. The sophomores completed peer-assessment rubrics after each writing assignment to promote a peer editing atmosphere. The freshman and sophomore teachers also used student portfolios which were entirely student-created, student-presented, and student-monitored. Obviously, students were assessed daily during all of the previously mentioned interventions by teacher observation and product evaluation.

All four teachers (English and math) targeted all seven of Howard Gardner's established intelligences at various points during the intervention process. Already mentioned Figure 1 (math) and Figure 2 (English) illustrate each intervention and the targeted intelligence they promote. As the reader can see, with the exception of musical/rhythmic, each intelligence was targeted several times during the reading process in both areas of study.

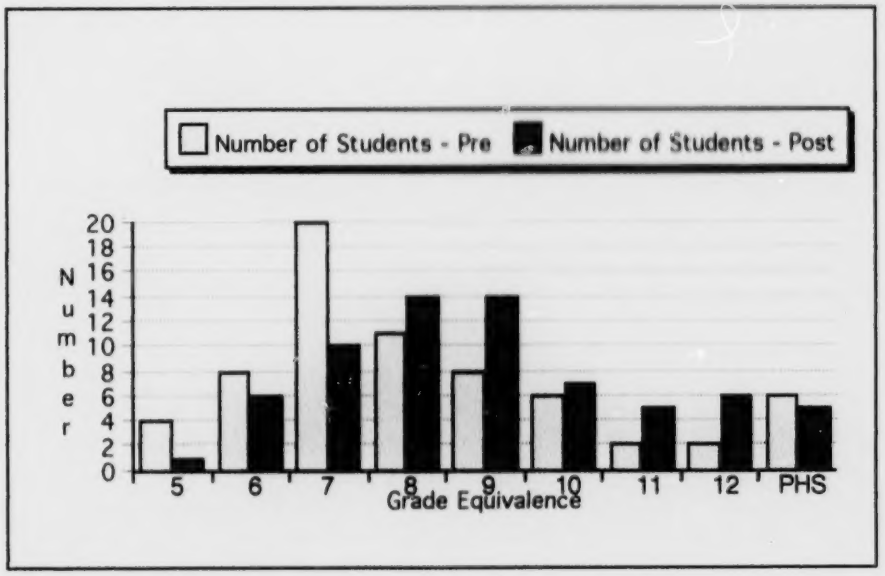


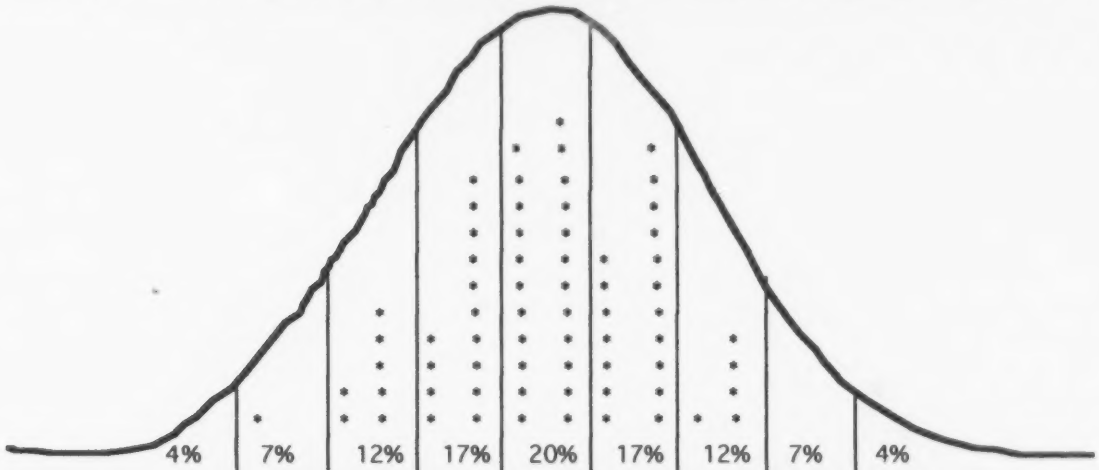
Figure 3. Performance on Math Applications Pre and Post Stanford Achievement Test.

Presentation and Analysis of Results

In order to assess the effects of multiple intelligence strategies on reading comprehension, the Stanford Achievement Post Test (math) and the Gates-MacGinitie Post Test (English) were administered at the end of the intervention. Both subject areas will be treated separately as follows.

On the math test, 46% of the students scored below the ninth grade level as compared to 63% below the ninth grade level on the pretest. This represents a 17% improvement in the scores at or above the ninth grade level (Figure 3). In addition, on the post test, a normal distribution of stanines, percentile ranks, normal curve equivalents, and performance classifications show that 50% of student scores were below the fiftieth percentile, which represents an

Table 4 Performance on Math Applications Stanford Achievement Test January 15, 1998



Stanine	1	2	3	4	5	6	7	8	9
Percentile Rank	Below 4	4-10	11-22	23-39	40-59	60-76	77-88	89-95	Above 95
NCE	1.0-10.4	13.1-23.0	24.2-33.7	34.4-44.1	44.7-54.8	55.3-64.9	65.6-74.7	75.8-84.6	86.9-99.0
	Below Average			Average			Above Average		

18% improvement over the September pretest (Chapter 2, Table 2) in which 68% of the students' scores were below the fiftieth percentile. The post test bell curve is illustrated in Table 4.

Individually, thirty of the students (44%) were able to raise their scores at least one grade level. Of the remaining thirty-eight scores, twenty-three showed no significant change. However, 43% of these scores were already at the ninth grade level or above. Even though fifteen scores were lower on the post test, 47% of these scores were still at the ninth grade level or beyond. Table 5 not only supports these statistics but also provides a clear image as to the success of the intervention in math.

Table 5 Record of Individual Gains on the Stanford Achievement Test

Math Applications	January 15, 1998
Number of Students	Number of Grade Levels Improved
12	1
12	2
2	3
1	4
2	5
1	6

Figure 3, Table 4, and Table 6 all support the contention that multiple intelligence strategies do positively effect reading comprehension in the area of math. Although some specific students showed little, if any, improvement, the intervention should be viewed as a great success in the Algebra 1A classes.

On the Gates-MacGinitie: Form L Post Test (English), students showed a significant overall improvement as well. The breakdown of the pre and post

scores for all three grade levels can be seen in Figures 4, 5, and 6.

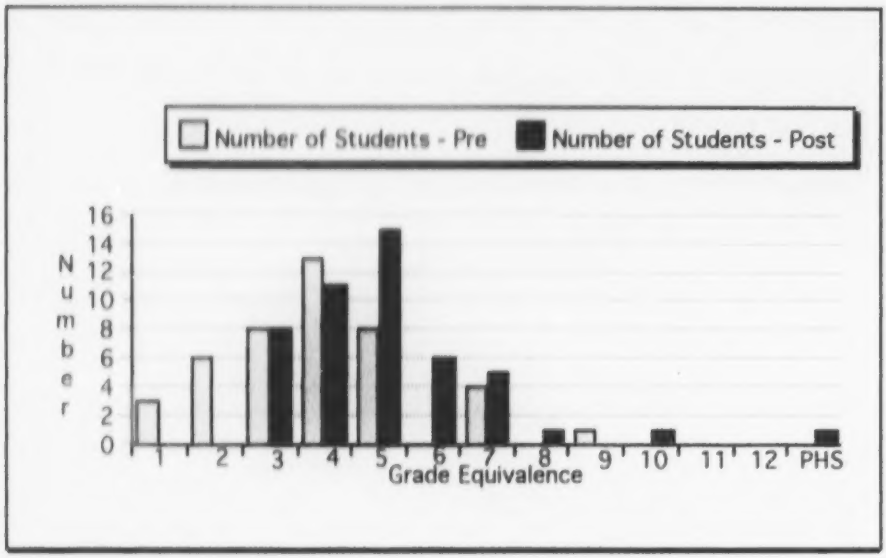


Figure 4. Results of the Freshman Pre and Post Gates-MacGinitie Reading Test.

On the freshman level, there was a substantial improvement, 88% of the pretest scores fell below the sixth grade level. However, only 70% of the scores do so on the post test, an 18% improvement. Before the intervention, nearly forty percent of the students scored below the fourth grade level while only 2% failed to reach that level on the post test. Two students even managed to score above the ninth grade level. It should also be noted that five more students took the post test than the pre because of the high mobility and attrition rates discussed in chapters one and two. This suggests that some of the students were not present throughout the entire intervention.

The sophomores also suffered from attrition and mobility. However, in this case there were four fewer students at the end of the semester. The reader should also take into account that these students are considered to be "upper-

level;" therefore, the improvements are not quite as dramatic. On the pretest, 42% of the students scored below the tenth grade level whereas only 34% did so on the post test, an eight percent improvement. There was also a 10% improvement in the students who did not even score at the high school level on the pretest. One particular student even managed to raise his score from the ninth grade level to the post high school level. Similar to math, most of those students who scored lower on the post test were already reading above grade level.

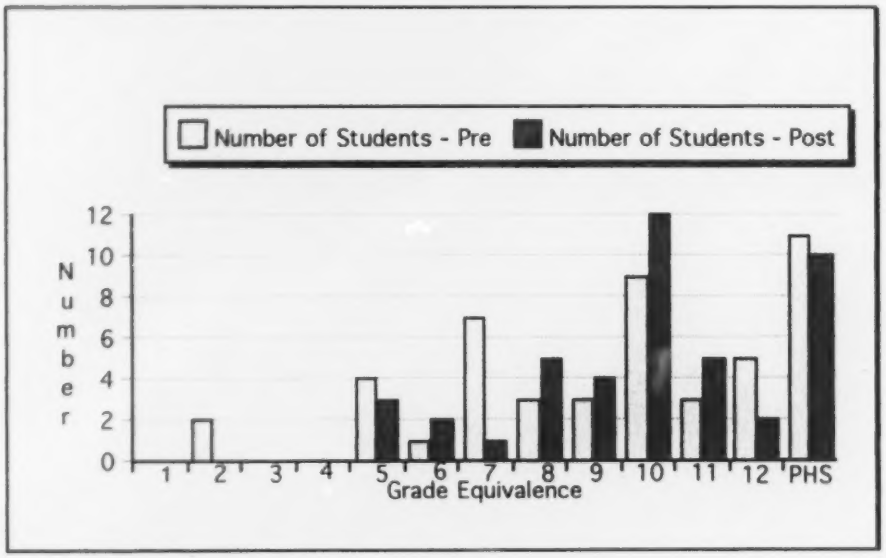


Figure 5. Results of the Sophomore Pre and Post Gates-MacGinitie Reading Test.

The junior intervention was hindered by attrition and mobility as well. There were two more students at the end of the research. Like the sophomores, these students are considered to be "upper-level" (reading at or above the eleventh grade level). Surprisingly, this group of students as a whole did not improve on the post test. Researchers surmised prior to the intervention that

the curricular demands on the junior level at Robinson would be quite overwhelming and that they would allow little room for deviation. Researchers also predicted that these older students would not be nearly as receptive to change as their younger counterparts. Both of these assertions will be discussed further towards the end of this chapter.

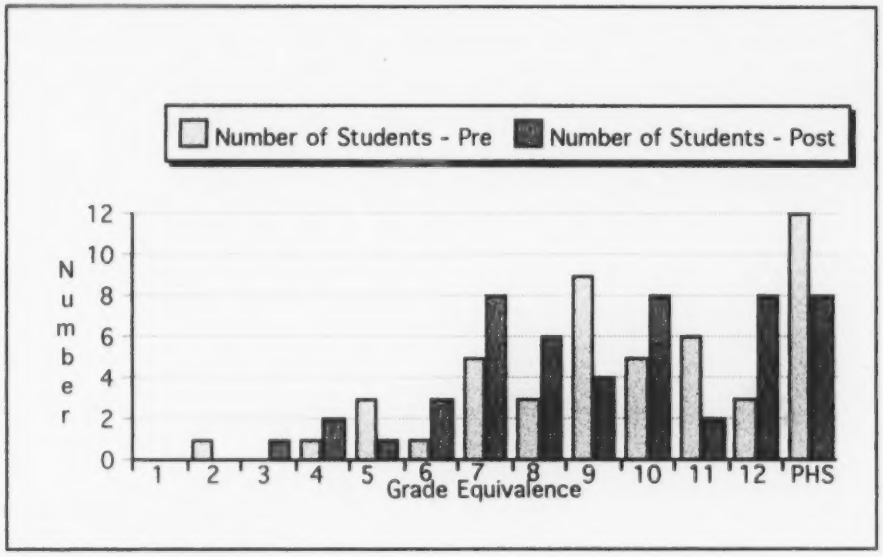


Figure 6. Results of the Junior Pre and Post Gates-MacGinitie Reading Test.

Even though these two standardized tests support, for the most part, this research's belief that multiple intelligence strategies effect positively reading comprehension, not one of the five researchers consider them reliable on their own. The purpose of their inclusion was to specifically show change, not to rate success in any way for true success can only be measured by the daily progress of the classroom and each teacher's personal assessment of the situation.

The last portion of this section is devoted solely to the progress made in

each of the classrooms throughout the intervention. The means of assessment here are much more subjective and rely on the actual grades received by the students at the end of the research and the teacher anecdotes maintained throughout the intervention. Figure 7 illustrates the breakdown of semester grades for all 224 of the students in both subject areas for all three grade levels.

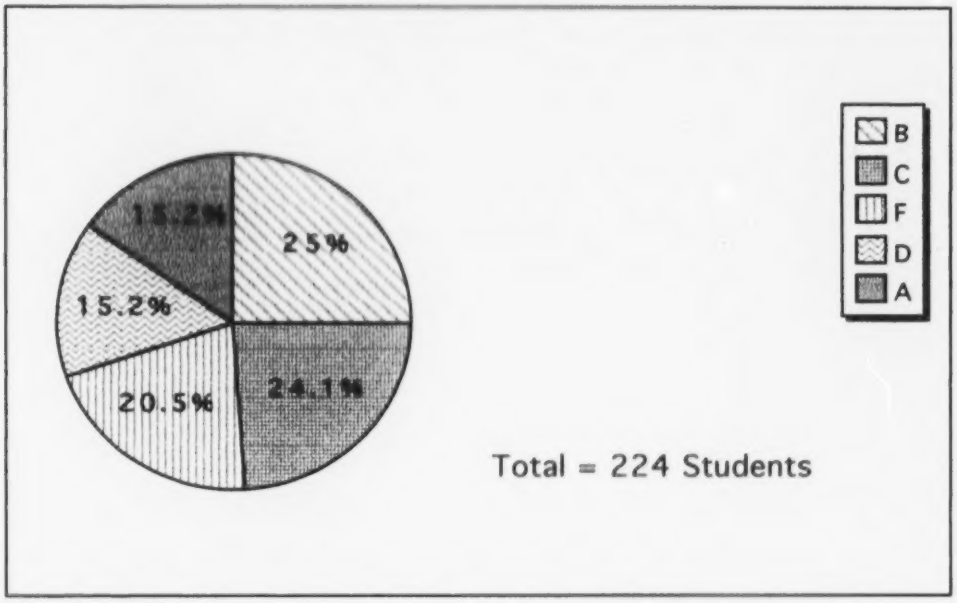


Figure 7. End of Semester Grades for the Targeted Freshmen, Sophomores and Juniors in English and Math Classes.

After examining the statistics in Figure 7, one might speculate that forty-six was too many students to have failing grades; however, this number was much lower than those from the past. In fact, most of those failing grades were automatic due to Robinson's strict attendance policy (Chapter 2). The others missed days and failed to make up missing assignments. On a more positive note, thirty-four students did receive A's, fifty-six received B's, fifty-

four received C's, and only thirty-four received the grade of D. Again, those D grades were mostly because of poor attendance and failure to make up work, which means that these students more than likely worked in the classroom but rarely applied themselves at home. Overall, the semester grades for both math and English were much better than past semesters.

Anecdotal journals were kept by all four teachers as a third means to assess the intervention (Appendices OO - RR). To be quite honest, all four teachers were extremely hesitant when the research began, but they soon changed their feeling as the process progressed. The math teacher began the year "feeling a little uncomfortable" because she was always figuring out how to approach the interventions and incorporate them into the Algebra 1A curriculum. But once she had all the interventions up and running, multiple intelligence strategies became a part of her repertoire. In her anecdotal, she affirms, "I was excited, exhilarated . . . I was enjoying myself, even if they did not . . .a very welcome needed change in my life!" She then goes on to give credit to her students for "hanging in there" and supporting her with their successful and effective participation.

The junior English teacher felt that the multiple intelligence intervention somewhat filled a void in her students' learning processes, an answer undoubtedly for disruptive behavior. She asserts that "adding to their waning interest in academics; a lack of respect for authority; empathy for more studious classmates; and a more heightened need for power, belonging, and fun were causing discipline problems in greater numbers and intensity." However, the multiple intelligence interventions seemed to neutralize much, if not most, of the previously mentioned causes for disruptive behavior.

Students successfully learned to respect others more and sometimes to empathize with others because of the cooperative learning process. Students

certainly became empowered, felt like they belonged, and had fun which eventually strengthened their interest in academics. The junior English teacher also writes that "they (the students) really enjoyed the activities, the opportunity to socialize while they learned, and the interventions which allowed them to demonstrate their skills in several areas." These later observations reaffirmed her early eagerness to include these interventions.

The freshman and sophomore English teachers had reservations at first as well. They seemed troubled with the question: What about the curriculum? The freshman teacher admits, "At first, I was reluctant to teach in this fashion because I felt as though I was being childish in a high school setting, and I was worried about watering-down the material." Both teachers know, however, that they had to occasionally disregard quantity for the sake of quality. In the end, the curriculum was covered, not necessarily as meticulously, but certainly more tenaciously.

The sophomore teacher describes his students' learning as "unfolded" because of the intervention, not "molded," the first inspiring student responsibility, the second demanding teacher responsibility. "I have always preached to my students to take responsibility for their own learning, but it wasn't until now that I realize I haven't given them the opportunity to do this. These methods allow the students to do what I have always been asking them to do" (Freshman English Anecdotal, Appendix PP). These methods tap into the multiple intelligences while increasing student success and strengthening student learning expectations. They demand active participation and produce effective results. They empower the students to become lifelong learners.

Conclusions and Recommendations

Based on the presentation and analysis of the data on reading comprehension and mathematics application scores, the students showed a marked improvement in reading comprehension in English and math. The strategies used to increase reading comprehension by targeting the multiple intelligences have been effective.

In mathematics and the freshman and sophomore English classes, the daily use of starter exercises focused students for learning. At the same time, these exercises appealed to those students whose strengths were musical/rhythmic and bodily/kinesthetic rather than logical/mathematical and verbal/linguistic. Students who in the past had been apprehensive about math and/or English seemed to relax and understand the material presented.

The cooperative learning model was quite effective for all of the students involved. In math, cooperative learning was used in conjunction with solving word problems in which the students had to read, reread, and think aloud together. This process increased their comprehension of word problems because the students were no longer overwhelmed with the task of individually having to solve a word problem. Their confidence and learning expectations grew along with their abilities to read and understand algebraic concepts.

Similar developments occurred in all of the English classes. Example activities can be found in the Appendices B - NN. As a result of cooperative learning, students took a more active role in their learning. They became more responsible and autonomous while still maintaining the proper social behavior needed to work together in groups. There was also much less direct instruction. Students relied on their peers before seeking the teacher for help. And finally, all the classes became more qualitative versus quantitative because product and progress were weighted equally.

Graphic organizers proved to be effective in both areas of study as well. In math, the graphic organizers were used primarily when solving the previously mentioned word problems. Several examples of the organizers used in both areas can be viewed throughout the appendices. Again, the students had to read, reread, and think aloud in order to successfully complete the organizers. Student organizational skills certainly improved causing reading comprehension and learning expectations to improve also.

Using the QAR reading strategy (Appendix D) was successful for the Algebra 1A classes in that it gave the students a useful tool to use when reading a mathematics book. The "Right There," "Think and Search," and "Author and Me" question-answer-relationships were used frequently. As a result, the students were able to transfer the use of this strategy to the math computer program. This program required a great deal of reading and also used the above question-answer-relationships. Another significant feature was that the computer remained "frozen" and would not proceed until the student successfully answered the question. Thus, the students soon realized that they had to read the material carefully in order to move on.

The computer program used in the freshman and sophomore English classes aided reading comprehension as well. Reading Investigations was a highly interactive program for which the student used headphones. The students solved a series of "reading mysteries" which demanded that they use all of the comprehension skills which were worked on in class throughout the intervention. Like the math program, the students could not move on to a new mystery until the present one was successfully solved. This caused the students to read more thoroughly and effectively.

Journal writing was done in all sections as whole class exercises and individual reflections. Many were done in response to cooperative learning

activities. The journal entries required critical thinking, reflection, knowledge of material, and most importantly, the ability to express oneself. Analysis of the journals showed significant improvements in every targeted intelligence and reading comprehension skill.

The appendices show that there were several other multiple intelligence strategies implemented that were not specifically mentioned above. There were so many because the teachers found that incorporating a various assortment of teaching/learning techniques kept the students actively on task. Students performed at a significantly higher level when actively engaged in their own and other's learning. Thus, reading comprehension, learning expectations, and grades improved. The variety of MI interventions allowed the students to become more aware of how they can be "smart," and these interventions provided different ways in which students can use their intelligences to their advantage when planning and pursuing their future.

The following recommendations might be helpful to anyone interested in developing an MI atmosphere in their classroom. Not only do these recommendations suggest ways of improving this particular research but they also reinforce the many successes which occurred.

Semester scheduling and student tracking somewhat limited the intervention in this case. All four teachers agree they would like to have had their students for a full year. After all, the multiple intelligence atmosphere wasn't created overnight. In fact, it took several weeks for the students to acclimate themselves into this extreme change of pace. Although the effects were successful at the end of the semester, they would have been more permanently embedded with the extra time. Instead, many of the students involved in this research were shifted at the semester's end to classrooms with more traditional teaching philosophies. One can only hope they will have the

opportunity to express their various intelligences there as well.

While teaching the QAR reading strategy in math, the teacher came to a sudden realization. In the past, this teacher had incorporated the reading material into her lectures. By doing this, she had been discouraging her students from reading. She didn't know how many times students complained of not being able to solve a homework problem because they had no example to follow in the notes. It never dawned on them to look to the reading for help. But why would they when the teacher ignored the reading in class? One very valuable lesson to be learned from this research is that math teachers should emphasize the importance of reading for the students by actually teaching the students how to read the textbook for understanding.

This research also recommends using starter exercises. High school students are notorious for not wanting to try new things, and, as a result, in the beginning, most of the students were self-conscious. But as time went by, they even brought in their own music (censored of course) for exercises such as the cross-crawl exercise. Eventually, the smiles on their faces each day upon the completion of the exercises was all the evidence needed to proclaim this intervention a success. Three of the four teachers were doing these exercises with eight different classes each day, and they can truly say they noticed an improvement in their own readiness to teach. They felt "sharper" evidenced by the fewer teacher mistakes made in class.

Using the cooperative learning model gives students an excellent way to interact and learn from each other. All four teachers in the study agree that the cooperative lessons that asked for graphic organizers were most effective. These teachers suggest that others should work on social skills with the students as a whole class first. Also, do some role-playing so the students know exactly which behaviors are acceptable. Cooperative learning should

begin as soon as possible; but if the proper social skills are not present, the students will not be nearly as successful as they could be.

Make sure the students become metacognitvely involved in the activities by using journals. This encourages the students to process their learning; therefore, self-esteem and interest are truly realized. They decidedly become more responsible for their learning.

Finally, it is important to create an MI atmosphere in terms of the present. Curricular demands are not the most important issue. Students making the most of their education is the concern. Students do not all learn in the same way as many traditional philosophies seem to assert. Each student has his or her own strengths and weaknesses when learning, and the teacher needs to reinforce those strengths and provide the means to improve those weaknesses by tapping into the diverse intelligences of the students, After all, the object of education is to unfold the minds of students, not to mold them. Multiple intelligence strategies can act as a lens through which students can focus on this unfolding process.

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APPENDICES

Appendix A

Teacher Survey

Teachers: We are currently working on our Master's Degree from St. Xavier University. We would appreciate you taking a few minutes to answer the following questions. **Please return this survey to Sharon Swanson via school mail by September 23, 1997.**

Frank Kuzniewski
Mike G. Sanders
Gail Sue Smith
Sharon Swanson
Carol Urich

Directions: Please circle either "yes" or "no" to each of the following. Please indicate which department you are in.

Department: _____

1. Traditional teaching methods are meeting our students' needs.	YES	NO
2. All students can learn the same way.	YES	NO
3. Each student possesses a unique learning style.	YES	NO
4. Each student possesses multiple intelligences.	YES	NO
5. Are you familiar with Howard Gardner's theory of multiple intelligences?	YES	NO
6. Do you use music in your classroom?	YES	NO
7. Do you allow students to draw pictures in your classroom?	YES	NO
8. Do you emphasize proper social skills in your classroom?	YES	NO
9. Do you allow students to move around frequently in your classroom?	YES	NO
10. Do you use portfolios as a means of assessment?	YES	NO
11. Do students keep daily logs in your classroom?	YES	NO
12. Do you offer alternative ways of doing assignments?	YES	NO
13. Do you use cooperative learning in your classroom?	YES	NO
14. Do you like trying out new teaching strategies in your classroom?	YES	NO

Teacher Survey (continued)

15. I am afraid to use contemporary teaching strategies because . . .

a) they have not been proven to increase student success	YES	NO
b) the curricular demands of my content area would not be met because of time limits.	YES	NO
c) I don't have enough planning time.	YES	NO
d) some of these teaching strategies require that a teacher be a certain "personality type" in order for them to work.	YES	NO
e) I feel that my present teaching methods are effective.	YES	NO
f) I'm just not interested.	YES	NO

Comments:

Appendix B

Seven Ways of Teaching Mathematics

Seven Ways of Teaching
M A T H E M A T I C S

Verbal / Linguistic	Logical / Mathematical	Visual / Spatial	Body / Kinesthetic	Musical / Rhythmic	Interpersonal	Intrapersonal
Write a series of story problems for others to solve	Find unknown quantities / entities in a problem	Do a survey of students' likes / dislikes, then graph the results	Use different parts of the body to measure things	Learn mathematical operations through songs and jingles	Solve complex story problems in a group	Track thinking patterns for different math problems
Explain how to work a problem to others while they follow	Teach how to use a calculator for problem solving	Estimate measurements by sight and by touch	Add and subtract members to and from a group to learn about fractions	Learn addition and subtraction through drum beats	Do a statistical research project and calculate percentages	Bridge math concepts beyond school (what? so what? now what?)
Make up puns using math vocabulary or terms	Create number sequences and have a partner find the pattern	Add, subtract, multiply, and divide using various manipulatives	Design something that requires applying math concepts	Play the "Rhythm Game" to learn times tables*	"Each one teach one" new math processes / operations	Use guided imagery to see complex story problems
Solve problems with a partner -- one solves and one explains process	Mind-map proofs for geometry theorems*	Imagine using a math process successfully, then really do it	Create and act out a play in which the characters are geometric shapes	Break a set of tones into various groups to learn division tables	Describe *everything* you do to solve a problem to a partner	Evaluate your strengths / weaknesses in understanding math
Create poems telling when to use different math operations	Design classification charts for math formulas and operations	Learn metric measurement through visual equivalents	Make up a playground game that uses math concepts / operations	Make up sounds for different math operations and processes	Have teams construct problems linking many math operations, then solve them	Watch mood changes as you do math problems -- note causes

Adapted from: Seven Ways of Teaching by D. Lazear; Skylight Publishing, 1991

* Interested in this activity? For more information, contact a [illegible] Singles for Learning Consultant

Graphic by C. George

Appendix C

Journal Entries for Math Classes

NAME_____ JOURNAL ENTRY

PER. _____

MY PERSONAL GOAL(S) FOR THE 1997-1998 SCHOOL YEAR:

Journal Entries for Math Classes (continued)

Name_____ **JOURNAL ENTRY**

Per_____ **Alg 1A**

Study these equations. Locate the mistakes. Then explain in your own words what the mistakes are and how to correct them. Use your knowledge of the order of operations, the properties of real numbers, the rules for the operations on signed numbers, and the laws of equations to support your statements. Remember, all explanations are to be written. NO MATH SYMBOLS MAY BE USED.

$3(x+2)-5=18$
$3x+2-5=18$
$3x-3=18$
$+3=+3$
$\frac{3x}{3}=\frac{21}{3}$
$x=7$

$4x-6x+2=3x-5$
$-2x+2=3x-5$
$3x=3x$
$x+2=5$
$-2=-2$
$x=3$

Journal Entries for Math Classes (continued)

NAME_____ **JOURNAL ENTRY**

PER._____

I feel that using a graphic organizer to solve word problems is

_____

_____

because_____

_____

_____

_____

_____

_____

Journal Entries for Math Classes (continued)

NAME_____ **JOURNAL ENTRY**
PER. _____ **GOAL SETTING**

My goals for today's cooperative learning lesson are:

_____

_____

_____

_____

_____

_____

Journal Entries for Math Classes (continued)

NAME_____ JOURNAL ENTRY

PER._____

Please describe in detail how you helped your team members with the assignment, OR how your team members helped you to better understand the assignment. Be specific. Name names. Refer to specific equations.

Journal Entries for Math Classes (continued)

NAME_____JOURNAL ENTRY

PER._____

YOUR TEACHER HAS ASKED YOU TO EXPLAIN TO ANOTHER STUDENT HOW TO DETERMINE THE DEGREE OF A MONOMIAL. WRITE DOWN EXACTLY WHAT YOU WOULD SAY TO YOUR PEER. (YOU MAY USE EXAMPLES)

Journal Entries for Math Classes (continued)

NAME_____ JOURNAL ENTRY

PER._____

THINK ABOUT WHAT YOU ARE THINKING AS YOU SOLVE THIS PROBLEM. WRITE THESE THOUGHTS DOWN AS YOU SOLVE THE PROBLEM.

Solve Here	Thinking Processes Here
$(3x^2+2x+1)-(2x^2+5x-3)$	

Journal Entries for Math Classes (continued)

NAME_____ JOURNAL ENTRY

PER._____

RECORD YOUR THOUGHTS AS YOU SOLVE THIS PROBLEM. BE SURE TO INCLUDE: 1) IDENTIFICATION OF PROBLEM "TYPE", 2) THE PLAN OR PROCEDURE YOU WILL FOLLOW, AND 3) PROPERTIES, DEFINITIONS, AND/OR RULES WHICH WILL BE USED WHILE SOLVING THE PROBLEM.

	Thought Processes Here
Factor: Show work $4a^2b - 6ab^2 + 8ab$	

Journal Entries for Math Classes (continued)

NAME_____ JOURNAL ENTRY

PER._____

IDENTIFY PROBLEM "TYPE". STATE THE PROCEDURE OR PLAN YOU WILL FOLLOW. LIST THE PROPERTIES, DEFINITIONS, AND RULES WHICH WILL BE USED WHILE SOLVING THE PROBLEM (PRIOR KNOWLEDGE). COMPUTE - SHOW STEPS.

	Thinking Processes Here
$(2a+2)(a-3)$	

Journal Entries for Math Classes (continued)

NAME_____JOURNAL ENTRY

PER._____

WHAT SKILLS (NOT NECESSARILY MATHEMATICAL) HAVE YOU LEARNED IN ALGEBRA 1A WHICH YOU CAN USE IN OTHER AREAS OF YOUR LIFE?

Appendix D

QAR Reading Strategy

This is a brief description of the QAR reading strategy and how it is applied to increase reading comprehension in mathematics.

The following information was found in an article written by Margaret E. McIntosh and Roni Jo Draper, titled Applying the QUESTION-ANSWER RELATIONSHIP Strategy in Mathematics, published in the "Journal of Adolescent & Adult Literacy," October, 1995.

As middle and high school students encounter mathematics books with extensive text, they find that they lack the skills for reading effectively. The purpose of this article was to share a familiar reading strategy, Question-Answer Relationship with a new twist for the mathematics classroom.

The Question-Answer Relationship strategy was developed by Taffy Raphael (Raphael, 1982, 1984: Raphael & McKinney, 1983: Raphael & Pearson 1985: Raphael, Winograd, & Pearson, 1980), was triggered by Pearson and Johnson's (1978) taxonomy of questions (textually explicit, textually implicit, and scriptally implicit). This taxonomy differs from others (e.g. Bloom's taxonomy - Bloom, 1956: Barrett's taxonomy - Bullock Committee, 1975: Smith & Barrett, 1979) in that it does not classify questions in isolation, but rather by considering the reader and the text. This reflects the current notion of reading as an interactive and constructive process influenced by characteristics of the reader, the text, and the context within which the reading occurs (e.g. see Jett-Simpson, 1990). It also reflects the constructivist paradigm espoused in Mathematics Education Today (e.g., Merseth, 1993).

In 1986, Raphael revised her original three-part QAR program to include a fourth component. Now in addition to Right There (textually explicit), Think and Search (textually implicit), and On Your Own (scriptally implicit), she recommended Author and You as a category. McIntosh and Draper have modified her categories somewhat for their application in mathematics.

The actual categories and how they are applied specifically to mathematics are

QAR Reading Strategy (continued)

as follows:

RIGHT THERE QAR:

The answer is "right there" in the text book - on the page - in the same sentence. Often the same words that make up the answer are found in the question.

THINK AND SEARCH QAR:

The answer is in the book, but you have to "think" about it and "search" for it. The answer is in the text, but not just in one sentence. The words in the question are not the same words that are found for the answer: In math, when the question is just like an example in the text, but only the numbers are different, this is a Think and Search QAR.

AUTHOR AND ME QAR:

The answers to the questions are not directly in the text; there may not even be an example like it in the text. However, the author has given you information in the text that you have to put together with what you already know (perhaps from previous sections or chapters), and then fit all of this together to let you come up with an answer. The author assumes that you have a brain and that you use it.

ON MY OWN QAR:

The answers to these questions are not in the book at all. You can answer the question without even looking in the book. These questions ask you to think about and use your own experience.

Example: "Negative numbers appear on television in many situations. What real situation might each number represent? a. -5.32 in stock market averages b. -9 in rocket launches c. -3 in golf."

Implementing QAR in the Mathematics Classroom

For each of the four QAR categories taught, the authors followed the same sequence. (This sequence can be followed regardless of the mathematics content being taught.)

Step 1: Grabber and introduction of QAR label and definition.

Step 2: Example of text from mathematics book with question, answer, and relationship/explanation.

Step 3: Guided practice using the textbook to find the relationship between the questions and the answers.

Step 4: Guided practice with identifying the relationship between questions and their answers.

Step 5: Learning logs.

When implementing the QAR categories in the targeted classes the first four steps were followed exactly. Due to time constraints and the fact that the targeted students were already journalizing, Step 5 was omitted.

QAR Reading Strategy (continued)

The following represents the actual way in which the Right There QAR was introduced. At the beginning of class, the following sentence was displayed on the overhead:

The blugy chinzels slottled prasily over the flubbish wub.

The teacher then read each of the following questions and elicited a response from the students:

~What did the blugy chinzels do?
~Who slottled?
~Where did the chinzels slottle?
~How did the chinzels slottle?
~What kind of chinzels were they?
~What is flubbish?

The students concluded they could answer each one of the questions by matching the words or sentence structure with the words or sentence structure in the question. At this point the Right There QAR was defined. The students wrote this information in their notes.

The teacher then began the mathematics instruction using the Right There QAR.

1. Teacher and students open math books to section one of chapter one.
2. Round robin reading of the text in section one.
3. Teacher/student discussion of what has been read to insure understanding.
4. Students take notes as directed by teacher.
5. Teacher then asks a series of questions (prepared in advance), the answers to which are to be found Right There in the sentence in the mathematics text.

Each category of the QAR strategy was introduced in basically the same manner. Eventually, the students were expected to use the QAR strategy on their own, especially when doing homework. The importance of reading the mathematics text and its' value in the successful completion of homework was stressed by the teacher.

Appendix E

Using A Graphic Organizer To Solve Word Problems

Cooperative Learning Lesson 2
Using A Graphic Organizer To Solve Word Problems

I. When students arrive, have them line up according to the number of siblings they have. Count off to form groups of three.

II. Discuss social skills: politeness, proper language, and participation.

III. Assign roles according to the number of siblings. In the case of a tie, assign them alphabetically by first name. Explain the duties for each role. The roles are the materials manager, the recorder, and the encourager.

IV. Put the transparency of the rubric on the overhead. Explain the point totals for today's class. Review the importance of group dynamics, shared responsibility, and that the whole team should share equally in completing the group product.

V. Go over yesterday's assignment.

VI. Review with the entire class the process for computing an average or mean. Use overhead.

VII. Have the materials manager turn in the homework from their group. The materials manager will then take one graphic organizer ditto, a calculator, and some scratch paper back to his/her group.

VIII. The task for this lesson is in the algebra book on p. 39. Each group may choose one word problem from this page and solve it by using the graphic organizer. The recorder will complete the graphic organizer. The encourager will make sure everyone in the group is contributing to the process. When complete, the materials manager will turn

in the graphic organizer.

IX. The materials manager will then pick up a journal entry for each member of their group. When everyone in the group is finished with the journal entry, the materials manager will turn them in along with their attendance sheet.

COOPERATIVE LEARNING LESSON ____

NAME **ASSIGNED ROLES** **Per. ____**

1._____ _____
2._____ _____
3._____ _____

	Points Earned	Total Possible Points
Group Product	_____	_____
Group Dynamics	_____	_____
Total	_____	_____

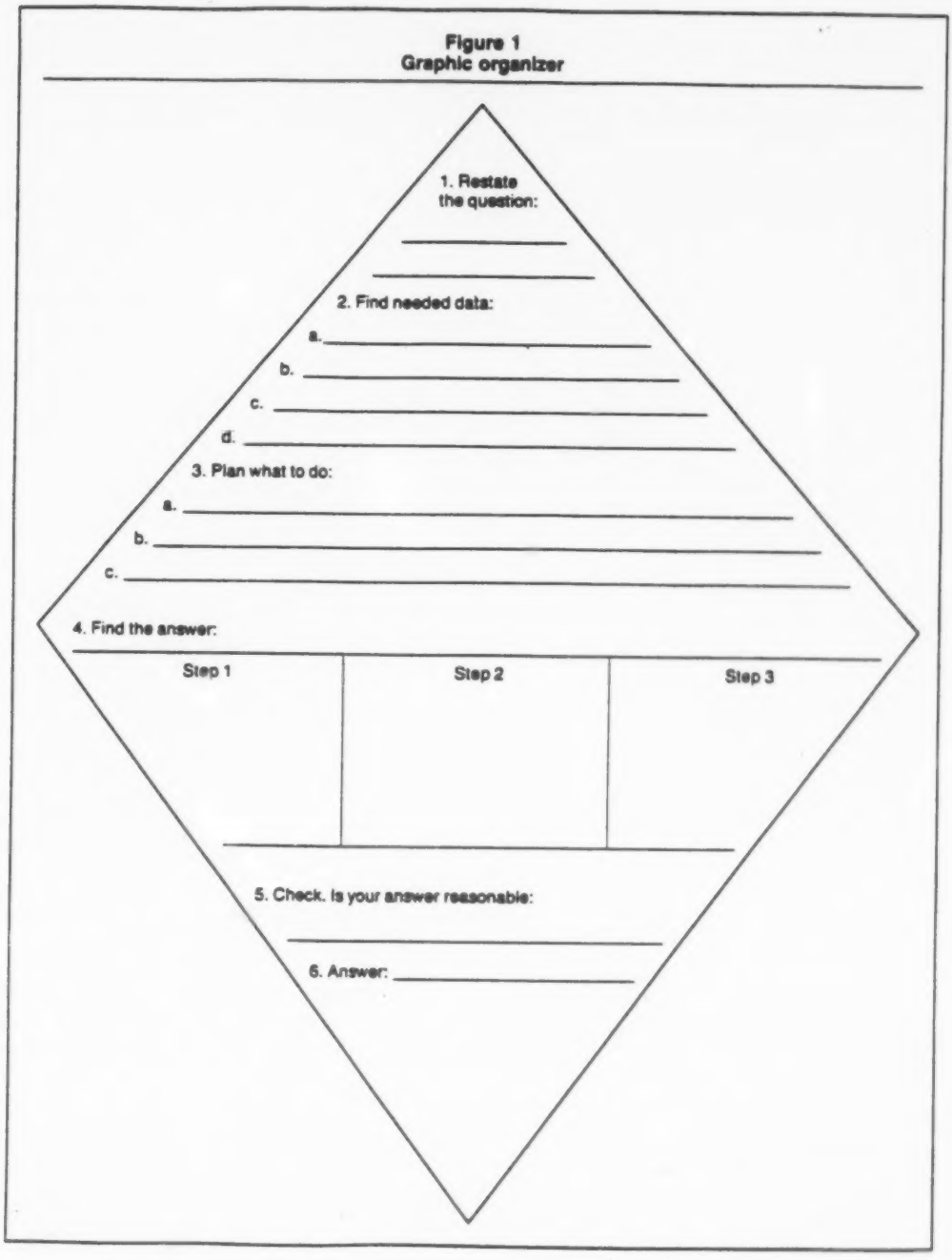
Scale: Total Possible Points = _____, A=___, B=___, C=___, D=___

Collaboration in Cooperative Groups

3_____6_____9

INDICATORS		
-Little interaction	**-Some interaction**	**-Enthusiastic interaction**
-Conversation not always on topic	**-Conversation usually focused on topic**	**-Involved conversation on topic**
-One person dominates	**-Two people are involved**	**-Whole group contributes**
-Several students off task	**-One student off task**	**-All students on task**

Using A Graphic Organizer To Solve Word Problems (continued)



Using A Graphic Organizer To Solve Word Problems (continued)

NAME_____ **JOURNAL ENTRY**

PER._____

I feel that using a graphic organizer to solve word problems is

_____

_____

because_____

_____

_____

_____

_____

_____

Appendix F

Algebra Topics Computer Program

Algebra Topics

Computer Program

Computer Curriculum Corporation
Sunnyvale, California

Overview of the Course

Algebra Topics is a highly interactive, motivating first-year algebra course. Intended for advanced junior high through adult students, the course includes all the material typically covered in an introductory algebra course.

Algebra Topics consists of a series of independent lessons, each presenting a specific topic. The lessons are arranged in the order generally found in algebra textbooks. Each lesson should take from two to six 20-minute sessions to complete. Students are given the option to select lessons, or they can be enrolled to work through the lessons in order.

Algebra Topics, a completely computer-based course, illustrates and supports algebraic principles in ways not available in textbooks. For example, the Graphing Environment, Equation Solver, and Expression Calculator are used by the student to explore algebraic relationships throughout the course. In the Graphing Environment, students can graph and compare polynomial equations or their inverses, specifying the numbers in the equations and other parameters. With the Equation Solver, students can enter and solve linear or quadratic equations and have each step of their solution verified for correctness. Students can type mathematical expressions, including variables, operations, and parentheses, into the Expression Calculator to evaluate them and see the result both as a reduced rational number and as a decimal number. These three student resources provide students with the opportunity for hands-on involvement in the learning process.

At their learning stations, students work through instructional sequences followed by exercises that test what they have learned. During the instruction, students may elect to use the student resources to practice new skills. Students can review the course content in four different ways, from immediate review of a previous screen to ongoing, long-term review of previously mastered lessons. CCC's automatic management system individualizes each student's instruction.

The automatic management system records each student's performance and provides information for both students and teachers. The on-line Student Report informs students of both session and lesson scores. Teachers can use detailed information from the course and grouping reports to monitor student progress and advise students on an individual basis.

CCC's Approach to Algebra Topics

With the purpose of providing individualized instruction in first-year algebra to junior high students and above, **Algebra Topics** was developed on the following principles and assumptions. A selected bibliography of the references consulted in the development of the course is included in Appendix A.

1. *Students benefit when they can take an active role in their learning.*

Algebra Topics provides interactive instruction for students in many ways. For example, instructional screens that present information also require student input at selected points. Students receive immediate feedback to their responses, which helps to maintain their involvement as well as to correct any misconceptions that may have developed.

The exercises in **Algebra Topics** require an active role by students. In addition to reading and answering the exercise, students receive answer-specific tutorial messages and may choose to see the exercise completed and answered for them if they are having difficulty.

Algebra Topics also encourages an active role for students by providing the student resources that students can elect to use at any time. These resources enable students to look up information or perform calculations in order to arrive at an answer.

In addition, at particular points in the course students are given the opportunity to experiment or practice as needed. One example is the treasure chest activity, in which the student practices using new information by guessing the Cartesian coordinates the computer has picked. A new clue is given after each guess, and the treasure chest opens to reward the correct answer. Many of the activities are open-ended, allowing the student to decide when the practice is sufficient and when it is appropriate to move to the next instructional presentation.

2. *Periodic and consistent review of learned content reinforces learning, improves student retention of material, and generates students' confidence in their ability to do algebra.*

Algebra Topics Computer Program (continued)

Algebra Topics provides four distinct ways for students to receive individualized review. Each review feature has its own role in instruction. The review options are described below.

First, students may choose to see previously viewed instructional screens in the current sequence. This feature allows students immediate review of instructional material. It also provides a way at the start of a session for students to review instructional screens from a previous session before they start new material.

The second review option occurs at the end of each lesson. Students may choose to see more exercises similar to those they missed during the lesson. The objective for each new exercise is the same as for the missed exercise. This individualized, end-of-lesson review gives students short-term review from the current lesson and focuses on those objectives on which the student performed poorly.

Algebra Topics also provides individualized "cumulative review" from all lessons students have completed successfully. This cumulative review gives students long-term review of objectives mastered earlier in the course. The review presents exercises selected from completed and mastered lessons, according to the students' current performance in cumulative review exercises from each lesson. This ensures that the students receive more review and practice from lessons in which their own performance indicates the need. Poor student performance in review results in a previously mastered lesson being marked "unmastered" on the course report.

Finally, students may repeat any lesson at any time when they have the default enrollment (lesson choice). This feature provides optional, specific review of lessons selected by the student or teacher. Students may also use this feature to improve their scores on previously completed lessons.

3. *Students benefit when the presentations are highly visual and related to real situations*

Many of the instructional presentations and exercises in **Algebra Topics** use color graphics to clarify concepts. For example, the instruction on the slope of a line describes and shows the slope of three mountains and relates this slope to skiing or sledding. Exercises from the lesson on linear functions show the linear function for the difference in time between a flash of lightning and the sound of thunder. Both the color graphics and the everyday examples are designed to present information in terms or situations understandable to today's students. Where appropriate, exercises require students to apply problem-solving strategies to real situations.

4. *Students learn from immediate feedback to their errors and immediate reinforcement of correct responses .*

After any incorrect answer in an instructional sequence, the correct answer and a tutorial message, when appropriate, are displayed. This feedback is especially important during the presentation of new material in order to avoid confusion or misunderstanding.

After each exercise in **Algebra Topics**, a positive reinforcement message and a congratulatory ribbon immediately inform students if their answer is correct. If the student response is incorrect, the management system displays a tutorial message designed to identify the error and to provide hints or additional information to direct the student toward a correct response on the second try. Tutorial messages for a second incorrect response may contain a full explanation of the correct answer and/or additional information that has not been presented in the earlier tutorial message.

5. *Students and teachers benefit when reports of progress provide detailed information regarding student performance .*

Three reports are available in **Algebra Topics**: the Student Report, the course report, and the grouping report. Each report is designed to provide information for a different purpose. The Student Report is available on the screen to students during a session. The Student Report allows students to monitor their own performance during a lesson and a session. It displays the name of the current lesson, the number of correct and attempted exercises, and the corresponding percentages for exercises both in the lesson and in the current session. The Student Report motivates students to perform better, since they can monitor their own progress and watch their scores improve.

The **Algebra Topics** course report, intended for teachers, is the most comprehensive and detailed of the reports. This report shows a wide range of information about student performance and position in the course, including cumulative scores and lesson scores. This report is designed to be used by the teacher to assess student performance and to identify areas where the student may need additional help or instruction. Also available to teachers is the **Algebra Topics** grouping report. This report lists the last six separate skill objectives from exercises missed by the student.

Content and Structure of the Course

The content of **Algebra Topics** is organized by topic and presented in 32 independent lessons. Titles indicate lesson content of the subject matter. The extent of the coverage for the specific skills is indicated by the number of exercises and number of presentation screens. The lesson titles, lesson codes, and number of exercises in each lesson are listed in Table 1. Specific skills are described in Appendix B.

STRUCTURE OF A LESSON

A lesson in **Algebra Topics** consists of two to five instructional presentations, each followed by exercises that test the student on the material. Each instructional presentation consists of several screens. The total number of exercises in a lesson varies from 15 in the introductory lesson to 87 in the Factoring Quadratic Polynomials lesson.

TABLE 1
Lessons in **Algebra Topics**

Titles of Lesson Topics	Lesson Code	Number of Exercises	Number of Presentation Screens
Introduction to Algebra Topics	IN	15	24
Order of Operations	OO	30	15
Variable Expressions	VE	29	16
Introduction to Real Numbers	RN	68	19
Properties of Addition of Real Numbers	PA	18	11
Adding and Subtracting Real Numbers	AS	75	19
Properties of Multiplication of Real Numbers	PM	52	9
Multiplying and Dividing Real Numbers	MD	82	26
Solving Equations	SE	58	13
More on Solving Equations	MS	66	17
Inequalities	IQ	35	9
Solving Inequalities	SQ	30	10
Compound Inequalities	CI	42	17
Translating Words into Mathematical Symbols	TW	62	11
Exploring Word Problems	EP	28	9
Mixture and Work Problems	MW	42	15
Powers and Exponents	PE	69	28
Adding and Subtracting Polynomials	AP	52	12
Multiplying Polynomials	MP	48	18
Factoring Polynomials	FP	56	13
Factoring Quadratic Polynomials	FQ	87	33
Solving Polynomial Equations by Factoring	SP	49	9
The Coordinate System in a Plane	CS	29	13
Functions	FN	32	24
Linear Equations	LE	39	24
The Slope-Intercept Form of a Linear Equation	SI	61	23
Determining the Equation of a Line	EL	28	18
Solving Systems of Linear Equations	SL	35	29
Square Roots	SR	46	12
The Pythagorean Theorem	PT	40	13
Radical Expressions	RE	46	18
The Quadratic Formula	QF	70	24
TOTALS		1519	551

Appendix G

Brain Gym

BRAIN GYM

What Is Brain Gym?

Brain gym is a program that prepares students of all ages to practice and master the skills required to learn. The program is a simple teaching format that uses stress-free language and a series of movements. Brain Gym is a self-directed, integrated system of movements that learners can apply to their own unique learning styles and potentials.

Brain Gym is a part of the Educational Kinesiology system. The philosophy behind Educational Kinesiology is that we can facilitate students' realization of their learning potential through movements. The program is unique in its approach to the physical components of learning. All new learning is based on movement and a supportive environment; the learners' natural curiosity takes care of the rest, attracting them to experiences where they can apply their learning.

Movement, or lack of movement, is our first teacher. Before we learn language, we bond through touch and eye contact; we have open self-expression; we give and receive energy without physical, mental, or emotional constraints. The newborn coos and gurgles, exploring the world again and again with her eyes, ears, hands, and feet. She traces the lines of her mother's or father's nose and lips like an artist, sculpting them forever into the recesses of her kinesthetic sense. She imitates the sounds around her unceasingly, playing with the full, satisfying feeling of breath, tongue, and voice.

Our earliest movements plant the seeds of enjoyment for a full sense of self and the basic understanding of the world. We build on these basic movements later when we move our eyes to read, turn our heads to listen, or engage our whole bodies in any physical activity. When movement is blocked by physical, mental, or emotional constraints, we learn incorrectly that some movements are not safe, and we may block that

feeling of life inside ourselves—the very thing that allows us to experience the joy of lifelong growth and learning. Learning blocks result from the inability to move through the stress and uncertainty of any new learning. All of us are learning blocked to the extent to which we have learned not to move. These learning blocks can be released through simple, specific body movements, such as those used in Brain Gym.

What Is Balance?

Brain Gym readies the system for learning through balance. Life is movement; movement is life. The physical structure of the human being depends upon movement for stability. Balance and equilibrium require the connection of opposing left and right, upper and lower, and back-to-front movements. Muscle balance requires the equal engagement of muscles for both contraction and expansion. Solidarity is established through the unity of structure and flexibility.

The underlying principle of movement is balance; the underlying principle for balance is movement. The first sensory organs to develop fully are the semicircular canals for balance. We balance ourselves as we walk by shifting our weight from the left foot to the right; we balance our chemistry by inhalation and exhalation, or by eating and elimination. We balance activity with relaxation and wakefulness with sleep.

A balance of whole-brain integration is necessary for learning. Intelligence demands the ability to move easily between generalization and specialization. Motivation is free from stress only when it unites individual needs with the rational and idealistic needs of the social being. Habituated response and conscious choice must both be available in harmony for true learning to occur.

When we encounter something new to be learned, the brain requires a great deal of energy to balance the new information with what we already know. If the learning situation is stress-

ful in any way, the system reacts rather than reasons. In this situation, only a small part of the brain is functioning, thereby decreasing the learning potential.

Educators have tried to redress failure in our schools by devising programs to motivate, entice, reinforce, drill, and "stamp in" learning. These programs are only partially successful; some children do well and others do not. Through the research conducted in Edu-Kinesthetics, we have seen that these approaches cause some children to try too hard and thus switch off the brain's integration mechanism that is necessary for complete learning.

All of the Brain Gym activities are physiologically designed to activate a balance between all parts of the brain with specific emphasis on the frontal lobes and integration between the left and right hemispheres. Following is a simplistic description of the functions of each hemisphere:

Left Hemisphere	Function	Right Hemisphere
pieces to whole	Processes	whole to pieces
alphabet,words, syntax	Language and communication	image comprehension
numbers	Math	intuition
analysis, logic	Reasoning	whole concept, Gestalt
technique	Sports	rhythm, movement
perspective, medium	Art	image, emotion
notes	Music	rhythm, emotion image

Creativity: A Whole-Brain, Integrated Function

Brain Gym stimulates equal activation of electrical energy in both hemispheres of the neocortex for thought and ideas, the limbic system for emotional motivation, and the brain stem to instigate the action required to follow through and express the new learning. Learning, therefore, becomes easy, free of stress, and enlivened with natural curiosity and the drive to learn.

Because Brain Gym addresses the whole body/mind system, it allows the learner to use her or his natural abilities without judging some abilities to be better than others. Brain Gym is a self-directed program, and as such, it teaches students techniques of learning that those students are able to apply easily to any situation.

How Did Brain Gym Get Started?

Brain Gym was developed in the 1970s by Dr. Paul Dennison in the Valley Remedial Group Learning Center, California, where for nineteen years Dr. Dennison helped children and adults turn their difficulties into successful growth. Dennison has been an educator all of his professional life. His discoveries are based on an understanding of the interdependence of physical development, language acquisition, and academic achievement. Brain Gym grew out of his background in curriculum development and experimental psychology at the University of Southern California, where he was awarded his Ph.D. for his research in beginning reading achievement and its relationship to covert speech skills.

For more than fifty years, pioneers in developmental optometry and sensory motor training have provided statistical research relating the effects of movement to learning. Dennison's familiarity with this research, oriented mainly toward children with specific language disabilities, led him to extrapolate this information into quick, simple, task-specific

movements that benefit every learner.

In 1990, Brain Gym was accepted by the National Learning Foundation as one of the top effective technologies for education. Brain Gym materials have been translated into nine different languages and are being used extensively all over the world. Brain Gym is being used throughout educational systems, including schools dedicated to addressing specific learning disabilities, and by psychologists, medical professionals,
sports professionals, artists, musicians, dancers, and business professionals.

Many of the benefits of using Brain Gym follow:

- **activates learning readiness**
- **increases focus and attention**
- **improves confidence and self-esteem**
- **builds critical thinking skills**
- **enhances communication skills**
- **promotes stress-free learning and increased motivation**
- **Increases awareness of and respect for one's own intelligence, body, and personal space**
- **includes specific strategies for improving reading, writing, spelling, math, and organizational skills**
- **greatly enhances creative potential**
- **reduces discipline problems**
- **can be done in less than five minutes**
- **does not require special equipment or space**
- **adapts well to any curriculum or teaching style**
- **immediate, long-term, demonstrable results**
- **highly effective for specific learning difficulties**

Appendix H

Seven Ways of Teaching Language Arts

Seven Ways of Teaching
L A N G U A G E A R T S

Verbal / Linguistic	Logical / Mathmematical	Visual / Spatial	Body / Kinesthetic	Musical / Rhythmic	Interpersonal	Intrapersonal
Teach "concept mapping" to help remember content*	Predict what will happen next in a story or play	Play vocabulary words "Pictionary"	Play "The Parts of a Sentence" charades	Learn Morse Code and practice communicating with it	Experiment with joint story-writing -- one starts, then pass it on	Write an autobiographical essay: "My Life to Date"
Write a sequel / next episode to a story or play	Creat a 4x4x4 outline on a favorite hobby*	Teach "mind mapping" as a notetaking process*	"Embody" (act out) the meaning of vocabulary words	Use different kinds of music for different kinds of writing	Analyze a story and describe its message -- reach a consensus	Write an autobiographical essay: "My Life in the Future"
Create crossword puzzles / word jumbles for vocabulary words	Learn to read, write, and decipher "code language"	Draw pictures of the different stages of a story you're reading	Act out a story or play that you are studying	Learn and practice "phonetic punctuation" (a la Victor Borge)	Use a "human graph" to see where a group stands on an issue*	Analyze literature for "connections to our lives today"
Play "New Word for the Day" game -- learn it / use it during the day	Analyze similarities and differences of various pieces of literature	Learn to read, write, and decipher "code language"	Learn the alphabet by body movements and physical gestures	Create songs / raps to teach grammar and syntax	Read poetry from different perspectives and in different moods	Write a new poem each day for a week on "Who Am I?"
Practice impromptu speaking and writing	Use a "story grid" for creative writing activities	Use highlight markers to "colorize" parts of a story or poem	Make up a "Parts of Speech" folk dance	Illustrate a story / poem with appropriate sounds	Conduct language drill exercises with a partner	Imagine being a character in a story / play -- what would you do?

Adapted from: Seven Ways of Teaching by D. Lazear; Skylight Publishing, 1991

* Interested in this activity? For more information, contact a [illegible]tegies for Learning Consultant

Graphic by C. George

Appendix I

Ordered Sharing

GROUP PROCESS

ORDERED SHARING

1. Sit in a closed circle.
2. Examine your core material.
3. Each person expresses a personal opinion about the chosen subject, with a time limit of, perhaps, one or two minutes. The person on the left expresses an opinion next. The direction of sharing continues around the circle.
4. No one makes any comment whatsoever about what another says. There is no opposition nor is there verbal support. However every silent member pays full attention to what is being said.
5. The group leader monitors timing and participation.

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Appendix J

Mind Mapping

Appendix K

Listening and Communication

RAPPORT

is the foundation of communication.
It's also a contract for responsiveness
which may or may not be conscious.

SECTION III: YOUR LISTENING STYLE— A BARRIER OR A BRIDGE?

Listening style reflects the attitude and behavior of the listener. It is how an individual responds when listening. Your listening style can be a *bridge* or a *barrier* to good communication. Listeners can avoid the barriers of listening by being aware of what the pitfalls are, and knowing how to avoid them.

Following are some descriptions of listening styles. Answer the questions following each description which will help these "characters" improve their listening styles.

VACANT VINCENT

The most difficult person to communicate with is a daydreamer. Meet Vacant Vincent. You will recognize him by the far-away look in his eyes. Vincent is like a social butterfly who dips in and out of conversations picking up bits and pieces of information. He is physically present but "not really there". Vincent is easily distracted, and often changes the subject without warning. Sometimes he slouches as if he is tired. He plays with his tie or impatiently taps his pencil on the desk. The best way to get Vincent's attention is to talk about *his* interests.

How can Vincent become a better listener? Following is a list of listening behaviors. Check any that would help Vincent improve his communication skills.

1. ___ Sitting in a listening position
2. ___ Making eye contact
3. ___ Controlling distractions
4. ___ Playing with his computer
5. ___ Fidgeting
6. ___ Sticking to the subject
7. ___ Taking an interest in other people
8. ___ Losing his temper

ANSWERS: 1, 2, 3, 6, 7.

COMPLIANT CURTIS

Compliant listening is a passive behavior that does not allow the speaker to understand the real feelings or opinions of the listener. Listeners such as Compliant Curtis listen much more than they talk. Often they are shy. They want to please others and keep communications pleasant. Compulsive talkers often seek out listeners like Compliant Curtis, because they need people with the patience to listen to them. Unfortunately, when Curtis speaks he usually keeps his *real* opinions to himself for fear of criticism. Sometimes he fakes attention as he silently thinks his private thoughts. In meetings Curtis nods his head approvingly, but adds little to the discussion. You will recognize Compliant Curtis by such phrases as "That's nice," or "I see your point."

How can Curtis become a more involved listener? Check any of the following listening behaviors that would help him improve his listening style.

1. ___ Voicing his opinions
2. ___ Working to develop positive assertiveness*
3. ___ Daydreaming
4. ___ Asking questions
5. ___ Listening more intently
6. ___ Mentally finishing other people's sentences
7. ___ Speaking with conviction
8. ___ Avoiding eye contact

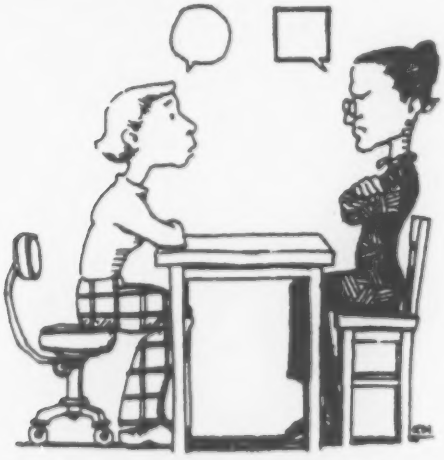
* For an excellent self-study book on this topic, order *Developing Positive Assertiveness*, using the information in the back of this book.

ANSWERS: 1, 2, 4, 5, 7.

BARRIERS TO COMMUNICATION (Continued)

CRITICAL CARRIE

Critical listening is important in business, especially when problems need to be resolved, but some listeners listen only to find fault. Critical Carrie listens to get all the facts, but is so critical of each item that she often misses "the big picture." Carrie frowns or rolls her eyes in disbelief as she listens to elements of a problem. Her questions for clarification are demanding and make her co-workers feel cornered. Critical Carrie is an incessant note taker, so her eye contact is limited. She finds little time for small talk. Her friends wish she would "lighten up" and not take things so seriously.



What would help Carrie communicate more effectively? Following is a list of listening behaviors. Check any that would help Carrie improve her listening style.

1. ___ Building rapport with "small talk"
2. ___ Listening for the "big picture"
3. ___ Taking more notes
4. ___ Becoming a better friend to herself
5. ___ Discrediting the speaker
6. ___ Determining the purpose of the discussion
7. ___ Developing patience
8. ___ Jumping to conclusions

ANSWER: 1, 2, 4, 6, 7.

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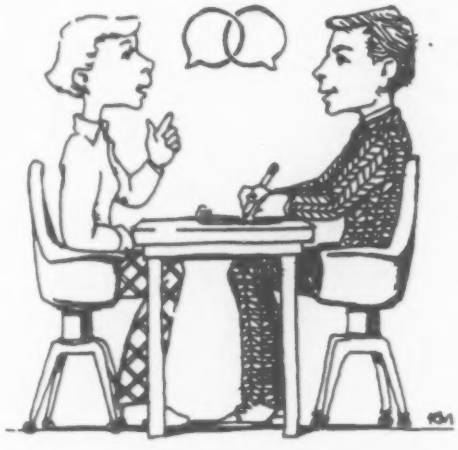
BRIDGES TO COMMUNICATION

"Active" listening is the bridge to good communication. It is committed listening based on good habits and self control. Good listening is purposeful and productive because it allows the listener and the speaker to reach understanding. Following are descriptions of active listening styles that create positive communication.

ARLO ACTIVE

Arlo Active, a skilled training director, is an involved listener. He is "present" and participative and assumes responsibility for the success of communications in his department. In meetings and discussions Arlo requires discipline and relevance from his subordinates and bridges gaps in understanding by asking questions for clarification. Individuals in his department appreciate Arlo's clear verbal *and* non-verbal responses and focused eye contact. Arlo tries to see the other person's point of view and refrains from evaluating information too quickly. As an active listener, Arlo listens not only to the *content* of employees' statements, but also to their *intent*.



BRIDGES TO COMMUNICATION (Continued)

LISETTE LISTENER

Lisette Listener, a successful real estate agent, c dits he success to active listening. When interviewing potential clients, Lisette "stens carefully to their requirements for a home. She pays close attention t. where they want to live, the desired style of house and the value they place on schools nd services. She asks many questions for clarification. She then "feeds back" what she hears to be sure slie is accurate in her interpretation. By the end of a busy "listening" day Lisette often feels as tired as if she had built a ...use, rather than sold one. She realizes that active listening is hard work but knows her results are measured clearly by er commissions, her satisfied new home owners, and new friends she makes because she helped them with a major decision.

Lisette Listener

Appendix L

Personal Thinking Patterns Inventory

Personal Thinking Patterns Inventory

adapted for SuperCamp, from *How Your Child Is Smart* by Dawna Markova

Directions For each question, choose the one answer that's most true. Circle the letter(s) in parenthesis. For example, if your answer to question 1 is "1.1," circle (U,V). After you've answered all twelve questions proceed to page 4.

1. **What do you remember most easily?**
   - 1.1 What's been said, jokes, lyrics, names of people, titles; I memorize by saying something repeatedly. **(U, V)**
   - 1.2 What's been seen or read, people's faces, how something looks; I memorize by writing something repeatedly. **(Z, Y)**
   - 1.3 What's been done or experienced, the feel or smell of something; I memorize by doing something repeatedly. **(X, W)**

2. **What do you remember most easily after a movie, TV program or reading?**
   - 2.1 What the people and the scenes looked like. **(Z, Y)**
   - 2.2 What was said or how the music sounded. **(U, V)**
   - 2.3 What happened or how the characters felt. **(X, W)**

3. **What do you remember most easily about people you just met?**
   - 3.1 What I did with them or how I felt with them. **(X, W)**
   - 3.2 How they looked, and how they dressed. **(Z, Y)**
   - 3.3 Their name, how they spoke, or what they said. **(U, V)**

4. **How would you describe your handwriting?**
   - 4.1 Most the time my style is neat and legible. **(Z, Y)**
   - 4.2 Most the time my style is difficult to read. **(V, X)**
   - 4.3 Most the time my style is messy. **(U, W)**

Personal Thinking Patterns Inventory (continued)

5. **How would you describe your physical needs and skills?**

   5.1 I am constantly in motion, wiggly; I need freedom to move. **(X, W)**

   5.2 I can sit still easily for long periods. **(V, Z)**

   5.3 I feel awkward or get easily frustrated when first learning a physical activity. **(V, Z)**

   5.4 I learn physical skills easily. **(X, W)**

6. **What's most important when you decide which clothes to wear?**

   6.1 How they feel, how comfortable they are, the texture. **(X, W)**

   6.2 The colors, how they look on me, how they go together. **(Z, Y)**

   6.3 An idea of what's me, the brand name, what the clothes say about me. **(U, V)**

7. **How do you express your feelings?**

   7.1 I'm very private about my feelings. **(Z)**

   7.2 My feelings seem right beneath the surface. **(U, Y)**

   7.3 I express my feelings easily. **(U, W)**

   7.4 I express reasons for my feelings easily. **(V)**

   7.5 It's almost impossible to put my feelings into words. **(X)**

8. **Under what conditions do you "space out?"**

   8.1 With too much visual detail, being shown something, or questions about what I see. **(U, W)**

   8.2 With too many words, verbal explanations, or questions about what I have heard. **(Y, X)**

   8.3 With too many choices of what to do, being touched, or questions about how I feel. **(V, Z)**

9. **How would you describe how you talk?**

   9.1 My words pour out, in logical order, all the time, without hesitation; I have a very good vocabulary. **(U, V)**

   9.2 I am self-conscious or shy about speaking in groups. **(Y, X)**

#9 continues on page 3. ☛

Personal Thinking Patterns Inventory (continued)

9.3 I use many metaphors and images. ("It's like a cyclone, a blue funnel, a whirling top.") **(Z, W)**

9.4 I talk mostly about what I did, how I feel, and what's happening. **(W)**

9.5 I must use my hands or movements to find words. I make hand motions before words. **(Y, W)**

9.6 I talk in circles, and tend to ask many questions. **(Y, X)**

10. How would you describe your eye contact?

10.1 I maintain steady, persistent eye contact. **(Z, Y)**

10.2 I am "eye shy," and am uncomfortable with eye contact for more than a few seconds. I look away frequently. **(U, W)**

10.3 I keep steady eye contact, but my eyes blink or twitch if I sustain eye contact. **(V, X)**

10.4 My eyes glaze over when I listen for too long. **(Y, X)**

11. What would be the most uncomfortable for you?

11.1 Mean and hurtful words. **(Y, X)**

11.2 Poking or invasive touch. **(V, Z)**

11.3 Nasty looks. **(U, W)**

12. How do you put something together?

12.1 I read the directions and then do it. Telling me confuses me. **(Y)**

12.2 I read the directions, ask questions, then talk to myself as I do it. **(Z)**

12.3 I work with the pieces, then ask questions if I need to. I never read the directions. **(W)**

12.4 I work with the pieces, look at the diagram, then ask questions. **(X)**

12.5 I have someone tell me, then show me how, then I try it. **(V)**

12.6 I have someone tell me how to do it, then I try it. I only read directions as a last resort. **(U)**

Marking Column and Graph on page 4. ☛

Personal Thinking Patterns Inventory (continued)

	U	V	W	X	Y	Z
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
	AKV	AVK	KAV	KVA	VKA	VAK

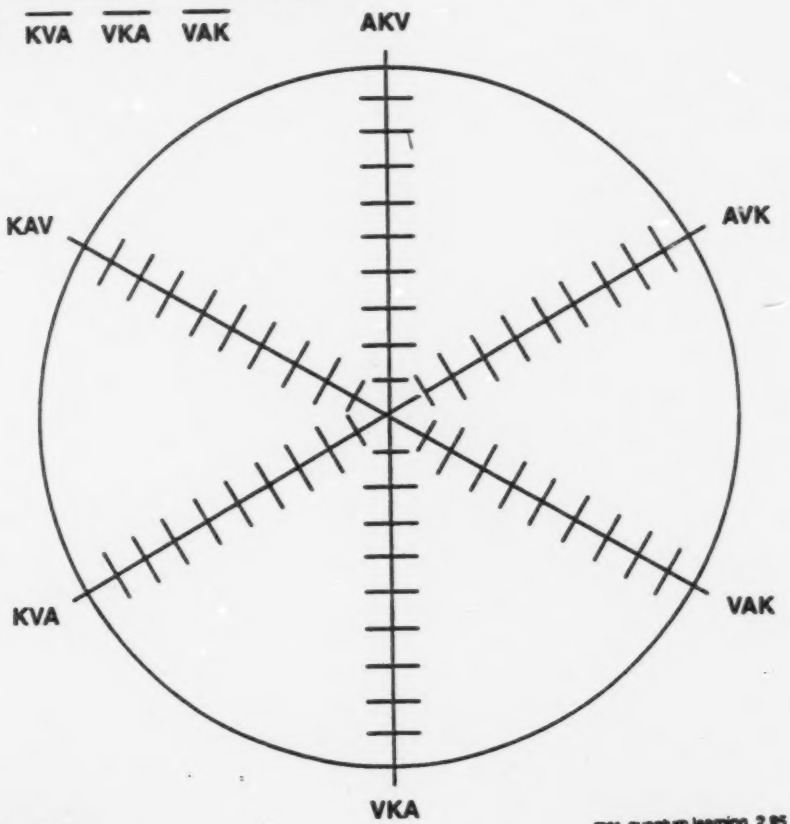
Make marks here.

Transfer your responses to questions 1-12 to this chart by making a mark in the appropriate column corresponding with the letters you circled. If more than one letter is given, make a mark in both columns. The column with the most marks represents your personal thinking pattern.

Total here.

Make graph here.

Each short line represents one (1) mark. Count from the center.



Appendix M

What's Your Learning Style?

WHAT'S YOUR LEARNING STYLE?

Research has shown that everyone has a unique learning style. You may be the type of learner who needs prodding and encouragement, or you may buckle down on your own. You may study best in the morning, or you may be a better afternoon learner. All this has little to do with moods, but a lot to do with inborn preferences.

This quiz will identify some aspects of your learning style, and it will ALERT you to YOUR NATURAL STRENGTHS which you can use to improve your learning experiences.

If the questions sound basic, there's a reason. They were selected from the Learning Style Inventory, a lengthy computer-scored quiz that has been simplified yet is still accurate. Answer each question either "True" or "False." Your first spontaneous response is probably the truest answer you can give. HERE GOES...

1. **I really like to listen to people talk. (True, False)**
2. **I really like to watch television. (True, False)**
3. **I must be reminded often to do something. (True, False)**
4. **I can sit in one place for a long time. (True, False)**
5. **If I could choose to go to school anytime during the day, I would go in the morning. (True, False)**
6. **I really like people to talk to me. (True, False)**
7. **The things I remember best are those I see. (True, False)**
8. **I don't have to be reminded to do something. (True, False)**
9. **I can't sit in one place for a long time. (True, False)**
10. **If I could choose to go to school anytime during the day, I would go in the early evening. (True, False)**
11. **I'd rather read than listen to a lecture. (True, False)**
12. **I prefer to learn something new by having it told to me. (True, False)**

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LEARNING STYLES TEST CONTINUED

13. I forget to do things I've been told to do. (True, False)
14. I find it hard to sit in one place for a long time. (True, False)
15. I remember things best when I study them in the early morning. (True, False)
16. I find it easy to listen to people talk. (True, False)
17. It's easy for me to remember what I see. (True, False)
18. I remember to do what I am told. (True, False)
19. I have to get up and move around when I study. (True, False)
20. I remember things best when I study them in the evening. (True, False)
21. I enjoy learning by listening. (True, False)
22. I like to learn by reading. (True, False)
23. I do what I am expected to do. (True, False)
24. It's easy for me to stay put when I study. (True, False)
25. I study best in the morning. (True, False)

AS A LEARNER, I FOUND THAT I AM:

1. _____
2. _____
3. _____
4. _____

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What's Your Learning Style? (continued)

ARE YOU A MOVER OR A SITTER?

Score a point for each "True" answer to questions 9, 14 and 19. Score a point for each "False" answer to questions 4 and 24.

WHAT THIS MEANS:

If you scored a 4 or a 5, you are a mover. You are probably miserable sitting in the library or at your desk for a long time.

HOW TO STUDY:

You need breaks - if only to stretch - every half-hour or so. Listen to your body and take them!

If you are confined to your desk, use this exercise: Inhale deeply and imagine the air flowing down through your chest, stomach, thighs and legs, right to your toes. Then exhale, drawing the air back up through your toes, legs and torso and out of your mouth. Relax your jaw since that is where tension tends to build. A few deep breaths may satisfy the urge to wander.

The need to move around often goes with the desire to eat while working. Both are distractions, but to many students they are important ones.

WHAT THIS MEANS:

If you scored one or two points, you are a sitter. Moving around is a useless distraction for you.

HOW TO STUDY:

Sitting still, often in an uncluttered environment, allows you to absorb material without losing your train of thought. Study when and where the only interruptions are those you choose.

What's Your Learning Style? (continued)

WHEN DO YOU LEARN BEST?

Score a point for each "True" answer to questions 5, 15 and 25. Score a point for each "False" answer to questions 10 and 20.

WHAT THIS MEANS:

If you scored 4 or 5, you are probably a morning learner. You may lose energy and wind down by midafternoon.

HOW TO STUDY:

Take your most challenging classes early, in the morning, if possible, and don't start your homework on Sunday night! You might consider setting your alarm clock half an hour early to get up and review your notes. Morning is a powerful learning time for you.

WHAT THIS MEANS:

If you scored 1 or 2 points, you are an afternoon learner. You are not lazy; you are simply in touch with a different biological preference than most schools are able to accomodate. You need to use your learning strengths to your benefit.

HOW TO STUDY:

You reach your peak in the late morning or afternoon. You need to plan your most challenging work during that time period.

Rather than going home from school and turning the television set on, you would want to use the afternoon hours to complete your homework.

SPECIAL NOTE: Ultimately, learning is up to you. While learning can be an extremely enjoyable experience, it is not always easy. You can empower yourself as a learner and make learning easier and more enjoyable by using what you have found out about yourself as a learner in this survey. List your learning strengths below, and put them to work for you - today!

I learned that I am_____

_____

_____

_____

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LEARNING STYLES: WHAT THE RESULTS INDICATE

This material and the Learning Styles test are adapted from the Learning Style Inventory. For more information, write to Dr. Gary Price, Price Systems, Inc., Box 3067, Lawrence, Kansas 66044.

DO YOU LEARN BEST BY HEARING? Yes, you do if you answered "True" to four or five of these questions: 1, 6, 12, 16, 21.

If you answered "True" to only one or two of these questions, you may be better off "seeing" what you want to learn. In all the categories, if you score a "3" this means you are adaptable, and that you possibly lean toward the higher score.

WHAT THIS MEANS: You would rather learn by hearing. You like to be told things. Reading the same material in silence, on the other hand, may leave you cold.

HOW TO STUDY: Study with someone else, and stop occasionally to talk over the information. If you do study alone and when you are taking a test in class, you will do better if you imagine hearing the words. Listen to your "mind's ear" when you read.

DO YOU LEARN BEST BY SEEING? Yes, you do if you answered "True" to four or five of these questions: 2, 7, 11, 17, 22.

WHAT THIS MEANS: You absorb new material better by reading it. (If you scored high as a listener too, you have both strengths.) You prefer printed handouts and more examples on the board, something you can relate to visually. Ask your teachers for this; they will be more receptive than you expect

HOW TO STUDY: If you are in a lecture class, take notes, ask to have things diagrammed, and seek out films, books or articles on things you didn't quite grasp in class.

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What's Your Learning Style? (continued)

DO YOU LEARN BEST WITH A MULTISENSORY APPROACH?

If you answered "True" to only one or two questions in both the hearing and seeing areas, you probably prefer multisensory instruction.

WHAT THIS MEANS:

"Hands-on" learning works best for you. You prefer to see, hear and touch something for it to make sense to you.

HOW TO STUDY:

If possible, do your work on computers or typewriters. Watch films of the information you want to learn. Take Language labs that use both recorded and visual materials.

DO YOU WORK WELL ON YOUR OWN?

Score a point for each "True" answer to questions 8, 18 and 23. Score a point for each "False" answer to questions 3 and 13.

WHAT THIS MEANS:

If you scored four or five points, you can handle a research project or paper on your own. You tend to be a high achiever, at least in areas that interest you. You don't need a lot of feedback while you are working, but you definitely seek recognition when you are done.

If you scored one or two points, you work best on short assignments, even if you must do more of them. Long texts may be less motivating and rewarding for you than workbooks that break material down into bite-sized segments followed by short quizzes. You may need more feedback while you are working.

You may want to examine your feelings about being told what to do, and separate them from the learning challenge that confronts you. Often, a student who is hostile toward authority figures, may appear to be lazy or irresponsible when, in fact, this is not the case at all.

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What's Your Learning Style? (continued)

Myers-Briggs/ Keirsey-Bates/ Murphy-Meisgeier Personality/Temperament Type Indicators

EXTRAVERSION E	INTROVERSION I
Learns best by talking over lesson first Likes to work with others Likes variety--in school and life Answers right away Notices everything that's happening Needs a quiet place to do homework	Likes to watch others first - then try Likes to work alone Works on one thing for a long time Waits before answering Can ignore distractions Can concentrate on homework with the T.V. or radio on
SENSING S	**INTUITION N**
Wants exact directions Works steadily/ Memorizes well Wants real-life examples for lessons Likes to practice familiar skills Likes stories about real people/ places Gets the facts but may miss the main idea Has "common sense"	May not read all the directions Works awhile, rests, works again Likes to see the possibilities for lessons Likes to learn new skills Enjoys fantasy stories Gets main idea/ may get facts wrong Has imagination
THINKING T	**FEELING F**
Wants to know "why" Tries hard to be the best Enjoys debating Likes to know what is right/ wrong May be embarrassed by failure Wants to get to the point Likes to understand others	Wants to know what matters/ people Tries hard to make others proud Gets upset with yelling and fighting Likes personal notes on papers May be embarrassed by disapproval Uses lots of words to express ideas Likes to work with others
JUDGING J	**PERCEIVING P**
Likes to make decisions Wants to know what is going to happen Plans assignments ahead Likes to know and follow rules Likes schedules and routines Too many changes may be stressful Works on just a few projects at a time Wants to produce things	Likes to stay open Enjoys surprises May do assignments at last minute Likes to explore; is curious Needs freedom to move around Adapts well to change Starts many projects; may not finish them all Likes to have fun while learning

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What's Your Learning Style? (continued)

LEARNING MODALITIES

VISUAL

CHARACTERISTICS OF VISUAL LEARNERS:

-- Organized, orderly
-- Must have <u>content</u>
-- Memorize by seeing a picture
-- Have difficulty remembering verbal directions
-- Spontaneous
-- Don't take risks
-- Need to see from where the information is coming ("whole picture")
-- Go into "body freeze" when learning
-- May squint when they can't "get it"
-- Have "Etch - a - sketch brains"
-- Learning: need to see the overall view and purpose; cautious until mentally clear
-- Recall: remember what was seen

TEACHING TO VISUAL LEARNERS:

-- Provide an overview, the "big picture."
-- They will remember the picture and relate it to the text.
-- When writing on the board, YOU look at the content (they will look at what you look at). Use "20 second rule."

SEQUENCE:

1. SEE 2. ACT 3. FEEL
(Often impetuous)

AUDITORY

CHARACTERISTICS OF AUDITORY LEARNERS:

-- Love to talk
-- Have "Cassette heads"
-- "Record" information with ability to replay perfectly
-- Memorize in steps, procedures and sequences
-- <u>Have</u> to say it, then repeat it, then record it and give it back
-- Frequently bob their heads
-- Talk to themselves
-- Speak in rhythmic pattern
-- Learning: dialogue internally, externally; try alternatives verbally first
-- Recall: remember what was discussed

TEACHING TO AUDITORY LEARNERS:

-- Use tonality and rhythm in your voice.
-- Teach sequentially.
-- Test the same way you teach.
-- Read directions to them and listen to them.
-- Say it in a different way if they don't get it.
-- When an auditory learner asks you a question, respond in the same rhythm (this builds rapport).

SEQUENCE:

1. LISTEN 2. LOOK 3. ACT

KINESTHETIC

CHARACTERISTICS OF KINESTHETIC LEARNERS:

-- Take their time
-- Have to <u>feel</u> it first; often accused of being slow
-- Need to experience first
-- Have "Scanlon hands"
-- Like manipulatives
-- Prefer big gestures
-- Touch people and stand too close
-- Physically oriented
-- Memorize by walking, seeing
-- See one thing at a time ("show me")
-- Learning: learn through manipulating and actually <u>doing</u>
-- Recall: remember, overall impression of what was experienced

TEACHING TO KINESTHETIC LEARNERS:

-- Supply a picture.
-- Slow down.
-- Use manipulatives.
-- Stand next to them and talk to them to help them focus.

SEQUENCE:

1. FEEL (ACT) 2. LISTEN 3. LOOK

GRAPHIC: C. GEORGE, A VISUAL LEARNER

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Appendix N

Question Answer Relationships

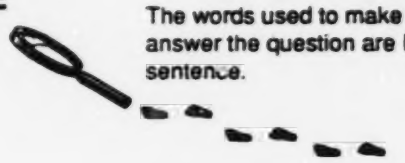
QUESTION ANSWER RELATIONSHIPS

In the Book

RIGHT THERE

The answer is in the text, usually easy to find.

The words used to make up the question and words used to answer the question are RIGHT THERE in the same sentence.

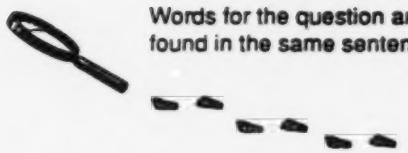


In the Book

THINK AND SEARCH

The answer is in the story, but you need to put together different story parts to find it.

Words for the question and words for the answer are not found in the same sentence.

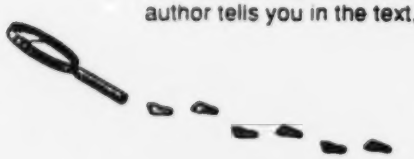


In My Head

AUTHOR AND YOU

The answer is NOT in the story.

You need to think about what you already know, what the author tells you in the text, and how it fits together.

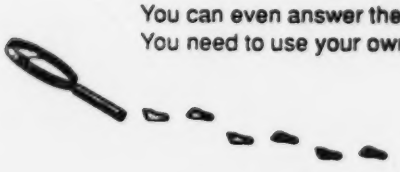


In My Head

ON MY OWN

The answer is NOT in the story.

You can even answer the question without reading the story. You need to use your own experience.



Appendix O

Book Report

This is a book report for the book:

_____

The author of this book is:

_____

This book report was completed by:

_____

Book Report (continued)

List the characters and write a sentence or two describing them in your own words.

1.

2.

3.

4.

5.

Book Report (continued)

Draw a detailed illustration of your favorite scene from the book. Use the entire paper.

Book Report (continued)

Write a personal letter to one of the characters from the book you read.

Book Report (continued)

In approximately 150 words, write the plot of the story for the book you read.

Book Report (continued)

What type(s) of conflict occurred in the book you read? After each, explain your rational for stating that particular conflict.

Appendix P

"The Witch of Blackbird Pond" Activities

CONNECTICUT BOUND

The Witch of Blackbird Pond **PREREADING**

Imagine that you are going on a journey in the late 1600's. You are leaving your sunny, tropical home in Barbados and sailing on a ship to Wethersfield, Connecticut, where you will spend the rest of your life. Connecticut is a colony at this time.

A. Before leaving, what information would you like to have? Make a list of five questions you would want to ask. After each question, tell one place where you might find the answer. Remember you live in the 1600's.

1.

2.

3.

4.

5.

B. Now make a list of the most important items you would take with you on your trip. Next to each item, tell why you would take it.

ITEM	REASON
1.	
2.	
3.	
4.	
5.	

C. How do think that your life will be different in this new land?

NAME _____ **LESSON 1**

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"The Witch of Blackbird Pond" Activities (continued)

A NEW LIFE

The Witch of Blackbird Pond

CRITICAL - CREATIVE THINKING
Reading Comprehension

By the end of her first day in Wethersfield, Kit realizes how different life is in America, especially at the Woods' home.

A. Make a list of as many differences as you can think of that exist between Kit's old life and her new life.

OLD LIFE	NEW LIFE

B. Now predict how Kit's thinking about each of the following will change:

her feelings about slavery:

her religious beliefs:

her loyalty to the King of England:

NAME _____ **LESSON 2**

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"The Witch of Blackbird Pond" Activites (continued)

PEACE

The Witch of Blackbird Pond — **WRITING** — **Critical - Creative Thinking**

When troubled, Kit visits the Great Meadow and there she finds peace.

Write a poem or a prose description of the meadow and the feelings Kit has when she goes there. The lines do not need to rhyme. If time permits, illustrate your poem or description.

NAME _____ **LESSON 6**

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"The Witch of Blackbird Pond" Activites (continued)

GUILTY OR NOT GUILTY?

The Witch of Blackbird Pond — **SPEAKING**
Critical - Creative Thinking

A. Kit is accused of witchcraft and brought to trial. Prepare a speech either for the defense or for the prosecution. Be sure to include evidence to support the side you choose.

B. Once you have prepared and given your speech for the defense or the prosecution, allow classmates to ask questions about your argument. Respond to these questions with answers based on your own experience as well as information from the story.

NAME _____ **LESSON 14**

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Appendix Q

"To Kill a Mockingbird" Unit

Unit Plan Using Multiple Intelligences Grid

Unit: To Kill a Mockingbird Grade Level: English III, Level A

Subject Area: English Timeline: four weeks

Major Goals of Unit:
1. To understand injustice in society
2. To understand justice as it also exists in individual's life and society
3. To demonstrate understanding of fiction elements in an objective test the students applied to the novel

List at least five learning experiences/assessments under each intelligence.

Verbal/Linguistic	Logical/Mathematical	Visual/Spatial	Bodily/Kinesthetic
Debate - Tom Robinson verdict Newspaper - Names of characters and story information formed into articles, cross-words, etc.	Puzzles of events / characters outlines - three fiction terms and application of the story events Venn diagram - comparison/contrast Bob Ewell/Atticus Scout/Mayella	Artwork - Draw a diagram of the Finches' home and their neighbors Graphic organizers to illustrate ideas from novel Illustrations - favorite part of story	Role playing - scene of Scout and Walter Cunningham at her home or Scout and Miss Caroline on courthouse steps Atticus and Bob Ewell spitting incident Mad dog and Atticus with Heck Tate - Jem watching Board game of story

©SkyLight

"To Kill a Mockingbird" Unit (continued)

Musical/Rhythmic	Interpersonal	Intrapersonal	Naturalist
Background - music from 1930's Raps about Bob Ewell/Atticus justice/prejudice Tom's escape Missionary Tea	Think-Pair-Share Discuss reasons for behavior Jigsaws - character events symbols of characters, events, feelings of characters Interviews of Bob Ewell, Atticus, Tom in jail before trial and after trial ~~- Scout after trial~~	Reflective journals - ideas about activities (actions) feelings about problem actions Divided journals - Boo what they felt, what they thought after further readings Poetry - Boo, the ghost Diaries - Boo, Scout	Environmental Studies - Read about 1930's Alabama Weather forecasting - reflect from the story weather, snow, heat, fire as they relate to the story Exploring nature sights in the

1. Whole-Class Learning Experiences: Read the novel | Briefly research 1930's trends (Depression) in America, southern states | Select one group project or performance | Select one individual written project

2. Whole-Class Assessments for Learning Experiences: Teacher-made test (numerical grade) | Research Project list of events and conditions, esp. social | Rubric to assess key criteria | Rubric to assess written project

3. Culminating Event for Unit: Combination objective and essay test - Matching, T/F, multiple choice, and five-paragraph composition

4. Circle Scoring Rubrics Needed for Whole Class, Group, and Individual Assessments:

Written Work | Media Projects | Group Projects | Performances | Technology | Problem Solving | Cooperative Group Work | Portfolios

5. Group Members: _____

Appendix R

The Captive

The Captive

I haven't slept in days, maybe in weeks. My waking hours are spent pacing up and down this 12- by 12-foot chamber of horrors. Why couldn't they have just killed me, put a bullet in my head? But no, for the rest of my life I have nothing but four walls and barred windows to look forward to.

It's a nightmare. I've tried to understand it, but I can't. What have I done, what laws have I broken to warrant this solitary confinement?

It seems so very long ago that I was happy. Certainly we had problems, maybe more than most, but she stood by me all the way. Then came the baby and more problems, but we were in love and would have overcome all obstacles.

BET
What will happen next?
Who is this?
Where is he?
Explain and tell why.

Then it happened. I was out for a walk as was my custom after dinner. The sun was shining on my face and the wind was blowing through my hair. I was tired. I'd had a long, hard day and shortly would return home for a leisurely evening with my family. The events that followed are even now vague in my memory.

Suddenly I felt a piercing pain in my side, and I began to run. I didn't know why I was so afraid, but I knew that I was running for my life. Finally, I could run no more. I fell on my face and lay there. Soon there were men holding guns all around me. They were looking down at me. Everything went black.

BET
What will happen next?
Who is this?
What happened?
Explain and tell why.

The Captive (continued)

2

The next month was spent moving from place to place. People were yelling at me, pointing at me, accusing me. There were times I thought I was completely insane, that everything happening around me was a nightmare.

I have murdered no one, so why am I here? I have stolen nothing. To the best of my ability I have obeyed the laws, yet for reasons I do not understand, I am to spend the rest of my life in a prison. What have I done?

When I was young, I heard about places like this—stories told late at night in whispered voices about the cold, damp dungeons and whip-wielding monsters that inhabit them.

It was common knowledge, the older ones said, that maggot-infested horse meat was the only food given to the captives—and that, only once a week—and dry bread soaked in sewer water. For the crime of even making a sound, one could be stabbed through the bars with long spears, leaving not fatal wounds, but deep slashes of painfully exposed flesh. If only I had known the truth, which is so much worse.

BET

What will happen next?
Who is this?
Where is he?
Explain.

The Captive (continued)

3

I am never allowed to leave this room and communicate with no one. I can hear my fellow prisoners on both sides, but I cannot talk to them. They both speak different languages. The guards ignore me and what little communication they have between themselves is also a foreign tongue.

All day long people are coming and going past my cell. They do not come in. They just stand outside, look at me, then leave. They speak the same language as the guards. In the beginning, I tried to get them to understand me, but like those whom I first came in contact with, they were deaf to my pleas. So now I am quiet. Somehow I know that I have been sentenced to remain here for the rest of my life, and I don't know why.

They have robbed me of my name. All my life I have been known as Iflan. Even though I can't understand their language, I have picked up two rather unimportant facts. Through the repeated use by my guards and the constant daily spectators, I have learned the name of my prison and the new name I have been given.

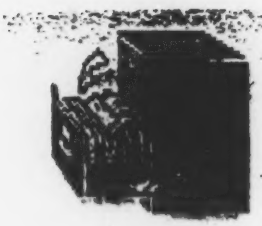
BET

What is the name of the prisoner?
What is the name of the prison?
Explain your ideas.

[*Patterns for Thinking—Patterns for Transfer*, (1989). Fogarty & Bellanca.]

Appendix S

Think Aloud Activity



From the files of Del Condon, Strategies for Learning

THINK ALOUD ACTIVITY

"The Dinner Party"

The country is India. A colonial official and his wife are giving a large dinner party. They are seated with their guests--army officers and government attaches and their wives, and a visiting American naturalist-- in their spacious dining room, which has a bare marble floor, open rafters, and wide glass doors opening onto a veranda.

and THINK!

A spirited discussion springs up between a young girl who insists that women have outgrown the "jumping-on-a-chair-at-the-sight-of-a-mouse" era and a colonel who says that they haven't.

"A woman's unfailing reaction in any crisis," the colonel says, "is to scream. And while a man may feel like it, he has that ounce more of nerve control than a woman does. And that last ounce is what counts."

and THINK!

The American does not join in the argument but watches the other guests. As he looks, he sees a strange expression come over the face of the hostess. She is staring straight ahead, her

Think Aloud Activity (continued)

muscles contracting slightly. With a slight gesture she summons the native boy standing behind her chair and whispers to him. The boys eyes widen and he quickly leaves the room.

and THINK!

Of the guests, none except the American notices this or sees the boy place a bowl of milk on the veranda just outside the open doors.

and THINK!

The American comes to with a start. In India, milk in a bowl means only one thing-- bait for a snake. He realizes there must be a cobra in the room. He looks up at the rafters--the likeliest place-- but they are bare. Three corners of the room are empty, and in the fourth the servants are waiting to serve the next course. There is only one place left--under the table.

His first impulse is to jump back and warn the others, but he knows the commotion would frighten the cobra into striking. He speaks quickly, the tone of his voice so arresting that it sobers everyone.

and THINK!

"I want to know just what control everyone at this table has. I will count to three hundred--that's five minutes-- and

Think Aloud Activity (continued)

not one of you is to move a muscle. Those who move will forfeit fifty rupees. Ready!"

and THINK!

The twenty people sit like stone images while he counts. He is saying "....two hundred and eighty...." when, out of the corner of his eye, he sees the cobra emerge and make for the bowl of milk. Screams ring out as he jumps to slam the veranda doors safely shut.

"You were right, Colonel!" the host exclaims. "A man has just shown us an example of perfect control."

and THINK!

"Just a minute," the American says, turning to his hostess. "Mrs. Wynnes, how did you know that the cobra was in the room?"

and THINK!

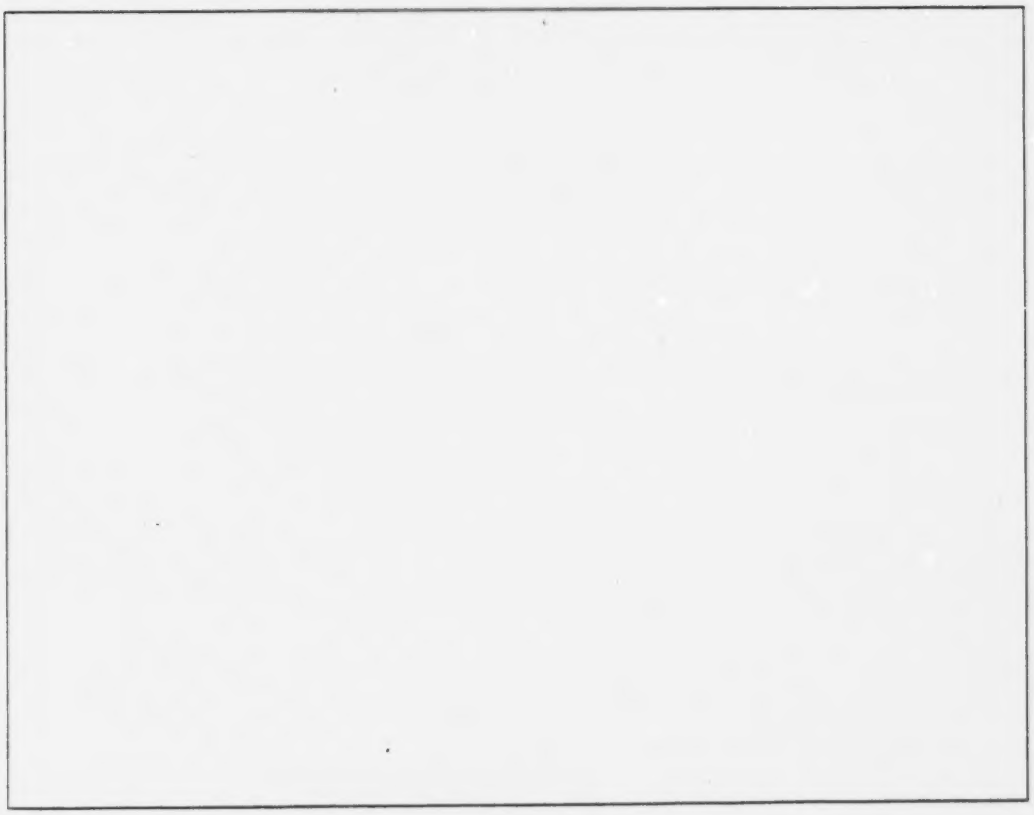
A faint smile lights up the woman's face as she replies: "Because it was crawling across my foot."

Appendix T

"Electric Lovin' Stallions" Activity

Assignment: In the space provided, draw a detailed illustration of the house Yvette and the *Electric Lovin' Stallions* live in.

Grading: Neatness, creativity, details, color, timeliness, and understanding of the setting.



Appendix U

Super Sleuth Detective Agency

SUPER SLEUTHS DETECTIVE AGENCY

Welcome and thank you for applying for a detective position with *Super Sleuths Detective Agency*. Before you are hired, you must perform a screening test in which you demonstrate your ability to be a detective. Your task is to become a detective in the **Central Intelligence Office** (school library). As part of a task force, you will search for answers to questions and track down clues using the resources available in the Central Intelligence Office. Once you complete this unit, you will be a trained investigator and will receive the rank of "Detective - First Class."

LIBRARY ETIQUETTE

Each **Central Intelligence Office** (library) has certain rules that need to be followed.

- Report to your "**station**" in the CIA on time every day. Your station will be marked with your **task force** name.
- Retrieve your **detective badge** from the **Task Force's Confidential File** at the beginning of every period. Attach the badge to your student I.D. Wearing the badge will enable the **Director of Intelligence** (librarian) to distinguish you as sleuths from the other students who are working in the CIA. It will enable them to better assist you. ***Make sure you return the badge to your file at the end of the period every day.***
- When working with your task force members, occupy your **task force area** only. Do not talk to or disrupt members of other task forces. Task forces who disrupt others will be penalized points.
- Appoint a **Task Force Commander** for your group. It is the job of the Task Force Commander to maintain the task force's **Confidential File** and make sure all materials are collected and returned to the **Bureau Director** (your teacher) at the end of the period every day.

  The TaskForce Commander will make sure that every paper has a name and that daily work is stapled together every day (group copy on top; individual copies underneath).
- Appoint a **Watch Commander.** It is the job of the Watch Commander to keep track of the time so that the group completes its work on schedule.
- Appoint a **Procurement Officer.** It is the duty of the Procurement Officer to pick up the forms (worksheets) that will be used on a daily basis and make sure that each member of the task force has the necessary equipment.
- When being given instructions, look at the speaker and listen. Take notes if needed. Instructions will be given only once.
- Use **quiet voices**. Your task forces are not the only ones occupying the CIA. You do not want to disturb others who are studying.

Super Sleuth Detective Agency (continued)

- ***Any task force member who finds it difficult to follow the guidelines or who does not pull his/her share of the load will be removed from the task force and will have to complete the work as an individual.***

TASK FORCE IDENTITY

You and the other applicants will be randomly divided into **cooperative task force groups**. The first job you have as a task force is to

- Appoint students to the following positions: Task Force Commander, Watch Commander, Procurement Officer.
- Decide on a **task force name**. The name should represent your group and should also have something to do with libraries. (i.e., Re-Searchers, Fruitville Bureau of Investigation) Keep the name in good taste. Be creative.
- Once your task force has decided upon a name, members will design its **Confidential File** (group folder). The file will help keep the research organized. The front of the file should include the name of your task force, the names of the task force members, and their assigned positions. Include an appropriate, colorful illustration.
- Carefully cut out your **detective badge**. Print your task force name, your name, and your position on the badge. Have Bureau Director punch a hole in the badge so it can be attached to your I.D.

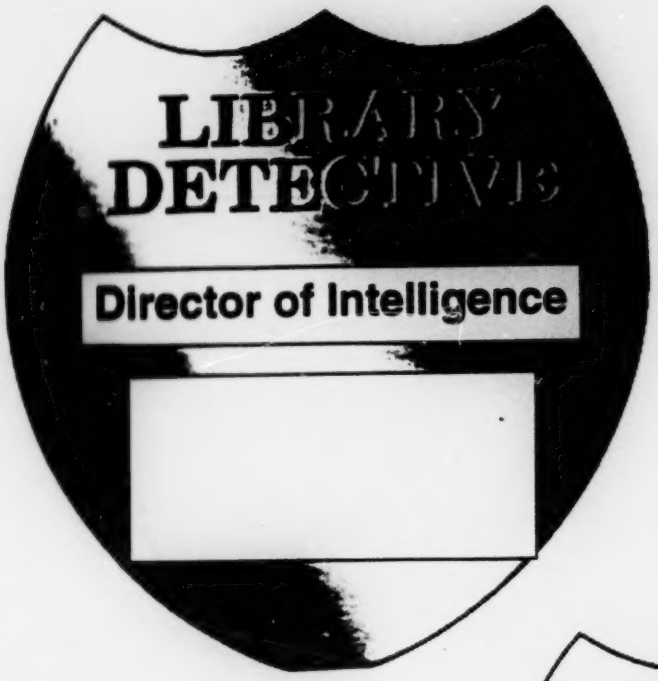
BECOMING A DETECTIVE

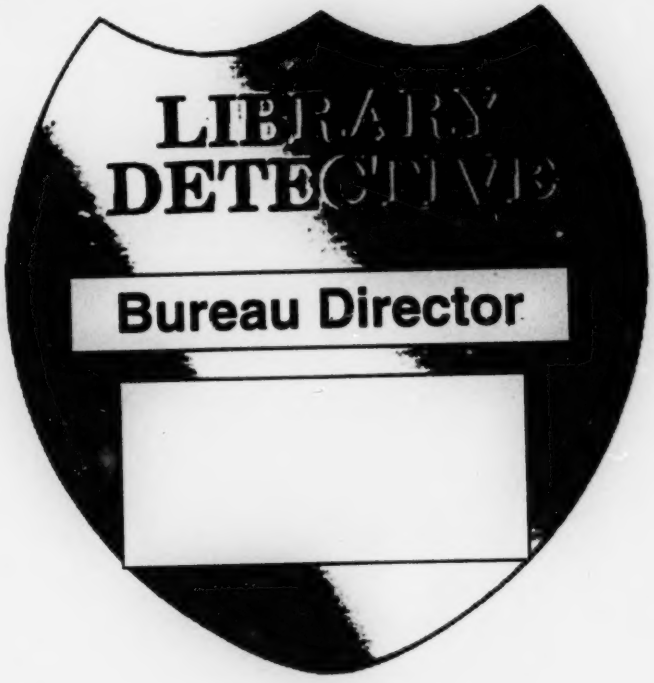
When you and other members of your task force work alone or together, each of you must think as a detective thinks. You must be curious, energetic, and creative. Seek as many sources as possible in order to get the correct answers.

Task forces will compete against each other. The task force having the most correct answers (highest score), not getting the work done in the shortest amount of time, at the end of the unit will receive a reward.

All task force members completing the course will receive a diploma and the rank of ***"Detective - First Class."***

Super Sleuth Detective Agency (continued)





Super Sleuth Detective Agency (continued)

Super Sleuth Detective Agency (continued)

DATE:

TO:

FROM:

SUBJECT:

cc:

DATE:

TO:

FROM:

SUBJECT:

cc:

LIBRARY MYSTERY CLUES - 10

Directions: **As you find the answer to each clue, you will get one piece of the manuscript puzzle which you will glue on the MANUSCRIPT PUZZLE PAGE that your teacher will give your group. However, you cannot just hand in an answer alone. You must find the answer in the library and list it along with the source on the MYSTERY CLUE ANSWER SHEET that your teacher will give your group. Even if you know the answer, you must find that answer somewhere in the library.**

Clue 1

- This famous woman lived from 1867 to 1934 and was a French physicist.
- She became famous for her research on radioactivity.
- She received two Nobel Prizes—one in physics and one in chemistry.

Clue 2

- This religion is based on the life and teachings of Jesus Christ.
- This religion's Bible is divided into an Old Testament and a New Testament.
- During the 1500s, the Reformation divided this church into Catholics and Protestants.

Clue 3

- This is the set of rules that are enforced and that dictate how a society is governed.
- This idea is divided into two main branches: public and private.
- A person trained and licensed to practice this process is called a lawyer.

Clue 4

- This language consists of small raised dots on paper that can be read by touch.
- The main who developed this language was a 15-year-old French student who was blind.
- This code was not accepted by some countries at first, but is now universally accepted.

Clue 5

- This is the largest animal that lives on land.
- They have larger ears than any other animal and their tusks give them the largest teeth of any animal.
- This animal eats grass, plants, leaves, roots, bark, branches, fruit, and shrubs.

Clue 6

- This story was written by Jonathan Swift.
- It was first called *Travels into Several Remote Nations of the World* by Lemeul Gulliver.
- In this story the hero takes four fictitious voyages—to Lilliput, Brobdingnag, Laputa, and Houyhnhnmland.

Clue 7

- This type of dance began in France during the 1600s.
- In this type of dance there are five basic positions which were developed more than 300 years ago.
- Some famous dances of this type are Swan Lake and Giselle.

Clue 8

- This invention slows the fall of a person or object from an airplane or other great height.
- The person credited with inventing this device is Sebastian Lenormand.
- The Chinese may have experimented with this type of device by jumping from high structures with umbrella-like devices.

Clue 9

- This state has the nickname of the "Keystone State."
- King Charles II of England gave this land to William Penn in 1681.
- This is the state where the Declaration of Independence was written and adopted.

MANUSCRIPT PIECES

1 A library is a wonderful place full of mysteries waiting to be unlocked.

2 Every time someone visits a library, a question can be answered, a problem can be solved, or an adventure can be taken.

3 No matter what you want or need, there is a book somewhere that will fill that need.

4 The library has worlds to explore, famous (and some who are not so famous) people to meet, places to visit, and historical events to uncover.

5 You can also find scientists and their discoveries along with technologies that are new and some that haven't even been invented yet.

6 In a library, you'll find information about art, music, composers, and dancers.

7 When you use the library, so many doors are opened to you.

8 Please don't neglect this most precious resource. Use the library and unlock the treasures found there.

9 There is really no more wonderful place in the world than a library.

Super Sleuth Detective Agency (continued)

MYSTERY CLUE ANSWER SHEET

1 **Answer** _____

Source _____

_____

2 **Answer** _____

Source _____

_____

3 **Answer** _____

Source _____

_____

4 **Answer** _____

Source _____

_____

5 **Answer** _____

Source _____

_____

6 **Answer** _____

Source _____

_____

7 **Answer** _____

Source _____

_____

8 **Answer** _____

Source _____

_____

9 **Answer** _____

Source _____

_____

Super Sleuth Detective Agency (continued)

MANUSCRIPT PUZZLE PAGE

1

2

3

4

5

6

7

8

9

Super Sleuth Detective Agency (continued)

MINI-MYSTERY

Directions: Take this form to your teacher for approval.

Clue 1: _____

_____

_____

Clue 2: _____

_____

_____

Clue 3: _____

_____

_____

Appendix V

"A Raisin in the Sun" - Drama Unit

A RAISIN IN THE SUN - DRAMA UNIT

Activity: Letter written by students to reflect the attitudes and concerns of Walter, Mama, Beneatha, and Ruth

Objective: To display understanding of the conflicts in the play
To learn alternatives to emotionally charged verbal arguments which can lack real communication between or among conflicting individuals.
To develop written skills
To develop oral skills
To develop social skills

Method: Cooperative groups of four, each representing one character
Discuss main points to be included
or
Develop a letter for one character depending upon the ability of the class and/or time available

Presentation: Written form (letter)
Oral presentation (reading letter aloud)

Evaluation: Class discussion of effectiveness of the letters
Rubrics

Multiple Intelligences used: Logical
Verbal
Kinesthetic
Interpersonal
Intrapersonal

Appendix W

Graphic Campaign Project

COMMUNICATING A PROCEDURE
GRAPHIC CAMPAIGN PROJECT

Here are some things to consider as you write your message:

1. The topic sentence should state the subject.
2. The paper should be organized in a step-by-step sequence.
3. Each step should be fully explained.
4. The ideas must follow a time sequence. Transitions (glue words, linking words) should be used to connect ideas.
5. The ending should be the last step. You might want to make some final comment on the finished product.
6. The verbs should be in the command form.

I. Tentative topic sentence (thesis statement)

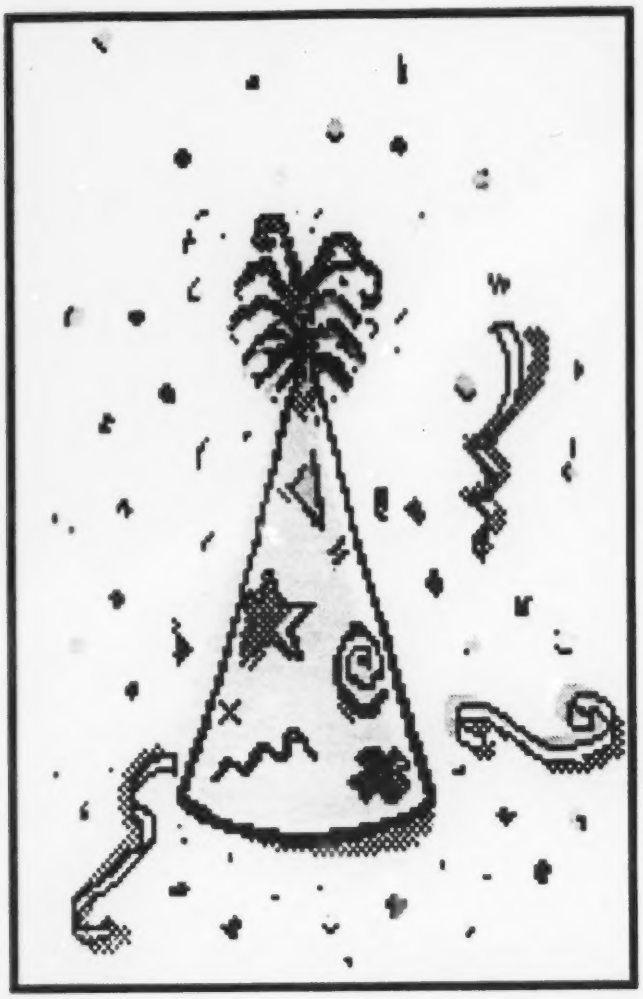
_____

_____

II. List all the necessary and logical steps	Transitional word
1.	
2	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	

Graphic Campaign Project (continued)

PARTYTIME, LTD.

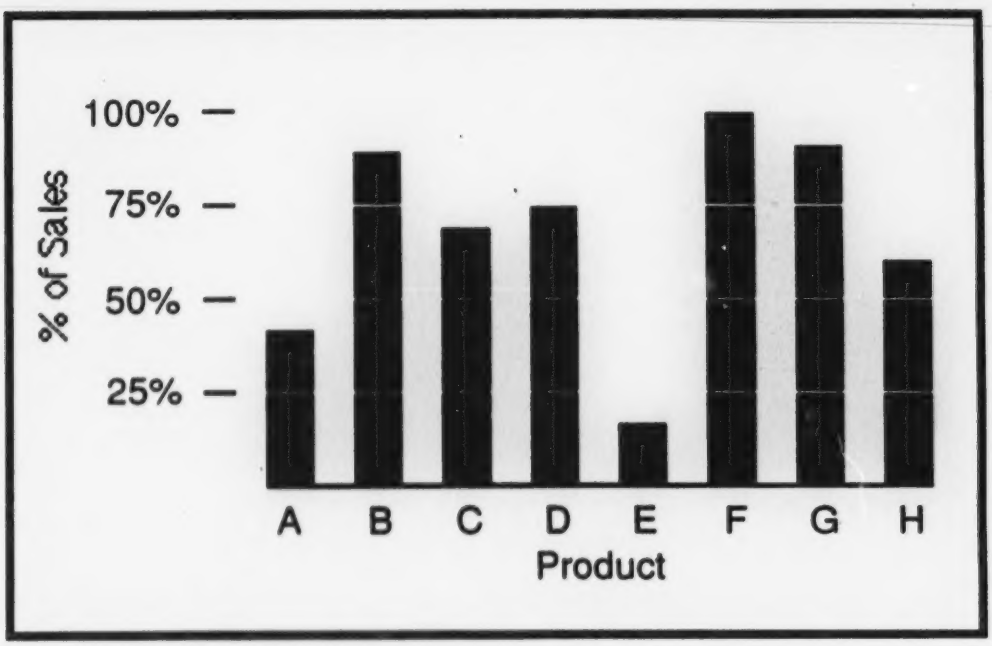


Graphic Campaign Project (continued)

SEE THE WORLD TRAVEL, LTD.

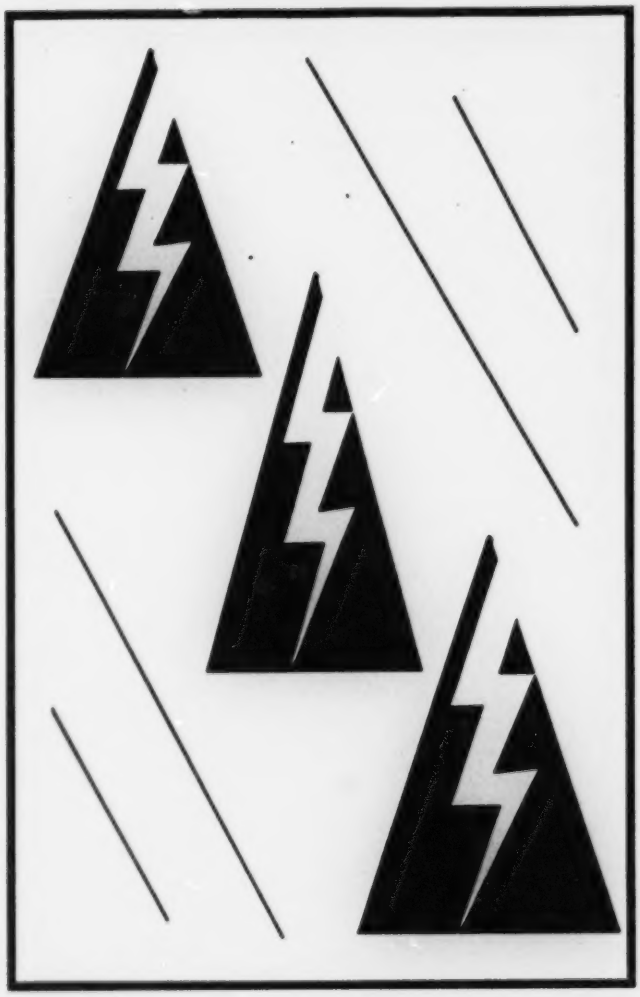
Graphic Campaign Project (continued)

SALES GRAPHICS, LTD.



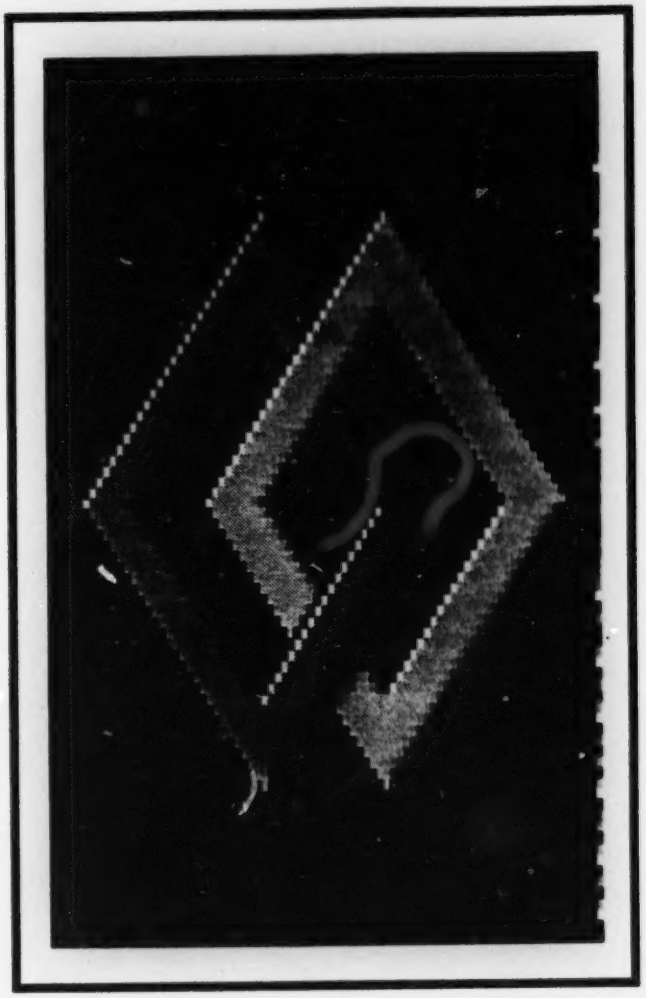
Graphic Campaign Project (continued)

MOUNTAINEERS, LTD.



Graphic Campaign Project (continued)

UNITED EXCHANGE, LTD.



Graphic Campaign Project (continued)

Try It!
The Expository Paragraph

SUBJECT: What I learned about listening from the Graphic Campaign Project

THESIS: From the Graphic Campaign Project I learned

_____,

_____, and

_____.

PREVIEW (WHY'S)	SUPPORT (SUBHEADINGS)	ELABORATION
1.	A.	
	B.	
	C.	
2.	A.	
	B.	
	C.	
3.	A.	
	B.	
	C.	

Appendix X

Analyzing Two Communication Situations

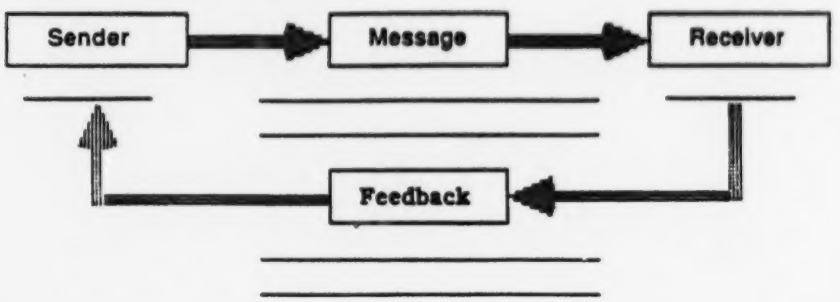
Module 1, Lesson 1 **Student Activity Master**

Name _____ **Date** _____

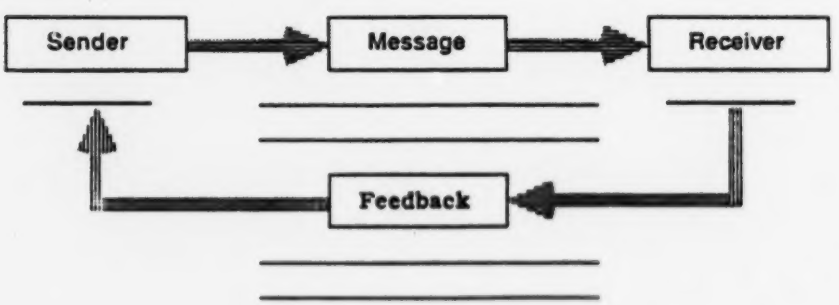
Analyzing Two Communication Situations

When you communicate at work, you are both a sender and a receiver of messages. Describe a typical communication situation in your vocational area, one in which you are the sender (Situation 1). Then describe another situation in which you are the receiver (Situation 2). Fill in the blanks of the following models. (Use Figure 2 on page 5 of the **Worktext** to guide you as you fill in the blanks.)

Situation 1: You're the sender.

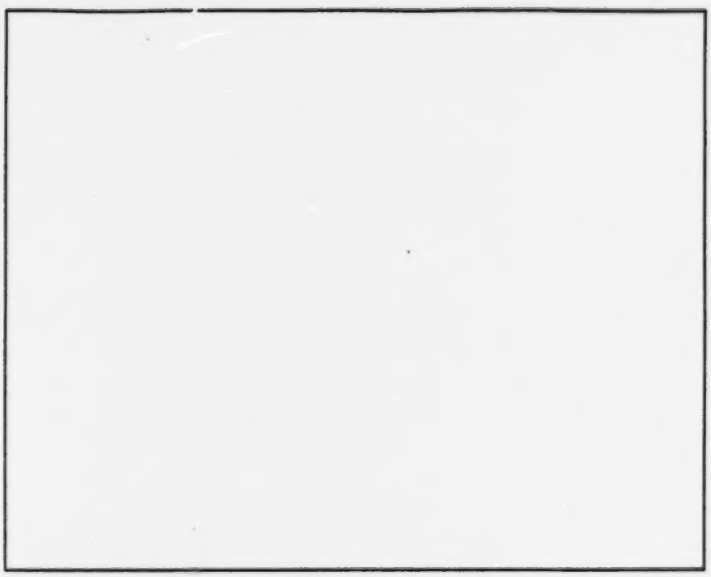


Situation 2: You're the receiver.



Appendix Y

Activity for "Brian Piccolo: A Short Season"



My favorite scene from the novel Brian Piccolo: A Short Season

is _____

_____

_____

_____

_____

_____

_____

Appendix Z

Creating A Travel Brochure Activity

DUE DATE: FRIDAY, JANUARY 16, 1998

Your assignment is to create a travel brochure for visitors to New York. Your brochure **MUST** include information on *at least six* of the following:

New York Bay

New York Paramount

Fifth Avenue

Radio City Music Hall

Empire State Building

Statue of Liberty

Greenwich Village

Wall Street

Carnegie Hall

Central Park

Times Square

Metropolitan Opera

Brooklyn Bridge

If you find difficulty finding any of the information you need, ask me or one of the librarians. Use all available resources.

Appendix AA

Role-Playing Situations

UNFINISHED BUSINESS
Role-Playing Situations

Each of us must

- *learn to think logically, creatively, and critically*
- *learn to express ourselves verbally*
- *learn to listen actively and effectively*
- *be able to act rather than react to others*

CASE STUDIES

Guidelines: You will have 10 minutes to study and discuss the situation with your partner.
You will have 5 minutes to role-play the situation, using effective communication strategies, before the class.
The class will have 5 minutes to discuss each situation presented.

Approach someone with unfinished business and say,
"I have some unfinished business with you. Do you have time to talk?"

1. Expressing a compliment
2. Asking for a favor
3. Reprimand someone
4. Issuing constructive criticism
5. Expressing a complaint
6. Expressing hurt feelings
7. Expressing feelings of being treated unfairly
8. Expressing feelings of not being adequately compensated for services rendered
9. Letting someone know that he/she is acting in a discriminatory manner
10. Letting an individual know that he/she is using language and/or making comments that are offensive
11. Letting another know that he/she has distracting/offensive body mannerisms
12. Expressing to another individual that he/she is not pulling his/her share of the load
13. Expressing to another individual that he/she has an attitude problem
14. Expressing anger or displeasure to another individual
15. Giving sympathy to another individual
16. Giving congratulations to another individual
17. Letting another individual know you want to help or be included

Appendix BB

Conflict

CONFLICT

CONFLICT is _____

_____

There are three types of CONFLICT: _____ versus _____,
_____ versus _____,
_____ versus _____.

In the story "_____," the following conflicts were found:

_____ versus _____	_____ versus _____	_____ versus _____

Appendix CC

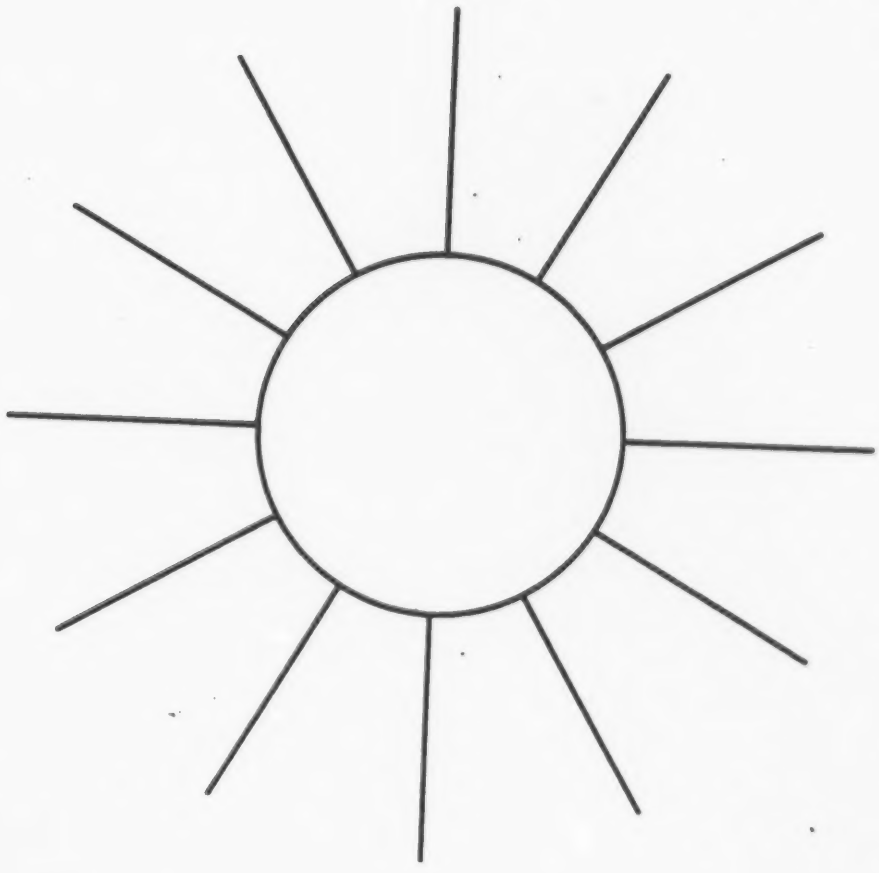
I Am Bag

NAME _____

Period _____ Date _____

I AM BAG

Directions: Inside the circle list five adjectives which best describe you. On the lines outside the circle list ten items to fit into your bag which support your view of yourself.



I Am Bag (continued)

NAME _____ _____

PERIOD _____ DATE _____

TEACHER OBSERVATION CHECKLIST

FOLLOWED DIRECTIONS

A. Web completed

B. Ten appropriate items in bag

COOPERATED WITH PARTNER

A. Showed enthusiasm in sharing bag and information

B. Encouraged partner to succeed/cooperate

WRITTEN PRESENTATION

A. Well-devloped "biography" of at least 14 sentences

B. Neatly written in ink

C. Proofreading evident

PRESENTATION

A. Showed knowledge of partner

B. Information presented clearly to class

C. Poise

LISTENING TO PRESENTATIONS

A. Three idtems about which you would like to know more

B. Wrap-Up - Find people and ask about the items of interest

C. Record of findings in your journal

Appendix DD

The Expository Paragraph

Try It!

The Expository Paragraph

Name of story_____

Author_____

SUBJECT:_____

PREWRITING

PREVIEW (WHY'S)	SUPPORT (SUBHEADINGS)	ELABORATION

THESIS: I _____ ***animals*** _____ ***think because***

_____, _____

_____, ***and*** _____.

NOW WRITE THE ROUGH DRAFT OF THE PARAGRAPH!

Appendix EE

English III Semester One Assessment

English III (Contemporary Communications I)
Semester One Assessment
Semester One's Assessment of the student's performance consists of three components: a written test (content), an observation assessment of behaviors, and a student-prepared *Exhibition Portfolio*.

Student's name_____
I.D. number_____
Class_____

I. Communication Skills

Knowledge of communication skills is assessed through the *Module One Assessment Test*.
Student's score: _____ correct of 20 possible answers _____% _____Grade

II. Observation Assessment

	Almost always	Often	Sometimes	Rarely
Reading Behavior				
1. Appears to enjoy reading and discussion				
2. Makes predictions while reading and tests them				
3. Uses prior knowledge to enrich understanding				
4. Draws reasonable inferences from text				
5. Demonstrates understanding of main ideas and issues				
6. Summarizes what has been read				
7. Practices strategies of skimming and scanning				
8. Reads and understands forms, diagrams, memos and letters				
Writing Behavior				
9. Understands that writing is a process				
10. Works diligently on assigned topics				
11. Employs prewriting strategies				
12. Writes logical and understandable correspondence				
13. Edits and refines writing				
14. Writing meets acceptable standards for grammar and spelling				
Class Discussion				
15. Freely participates in discussion				
16. Listens carefully and respectfully				
17. Supports own point of view with reasons or evidence				
18. Displays tolerance for different opinions				
19. Shows confidence in own judgment				
20. Demonstrates ability to modify thinking				
Group Activities				
21. Stays on task during group projects				
22. Cooperates with other group members				
23. Treats all members of the group with respect				
24. Makes significant contributions to the group				
25. Displays comfort in working with peers				
26. Completes assigned work				

III. Exhibition Portfolio
The student-prepared Exhibition Portfolio with documentation is attached.

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Appendix FF

Peer Evaluation

PEER EVALUATION

Your Name: _____

Whose paper are your evaluating?_____

1. Write the *thesis* here. Then circle the preview words (*why's*):

   _____

   _____

   _____

2. Write the *Support 1* sentence here. Then circle the *transition* word.

   _____

   _____

   _____

3. Write the *Support 2* sentence here. Then circle the *transition* word.

   _____

   _____

   _____

4. Write the *Support 3* sentence here. Then circle the *transition* word.

   _____

   _____

   _____

5. Write the *Concluding Sentence* here. Then circle the *transition* word.

   _____

   _____

   _____

6. Go back and reread each supporting sentence. Has the writer further explained (*elaborated*) each piece of support with at least *one specific example*?_____ If not, which supporting sentence needs additional elaboration?_____

7. Do all of the sentences deal with the subject mentioned in the thesis? _____ IF not, which sentence doesn't?_____

8. Are the support sentences in the same *order* as the ideas in the thesis?_____

Appendix GG

Test Your Knowledge

Test Your Knowledge

Use the knowledge you've gained to show you've mastered the information called for on the Black History Treasure Hunt. If you need to go back and review, feel free to do so. Then show what you know, by answering the questions below from your memory.

1. In the years before Black History Month began to be celebrated, how often were African Americans lynched?

2. How many million slaves did prominent abolitionist Frederick Douglass estimate there were in the years before the Civil War?

3. When the conflict over abolition ended with the Civil War, what did demonstrators outside the White House say was the one thing more that they needed?

4. Sixty years after the Civil War ended, what federal program helped to preserve the oral histories of people who had been slaves?

5. Who came before Rosa Parks in protesting the segregation of public transportation?

6. What was it that made Nat Turner lead his famous revolt in 1831?

Test Your Knowledge (continued)

7. What famous black leader said, "We represent peace, harmony, love, human sympathy, human rights and human justice, and that is why we fight so much?"

8. How does Martin Luther King Jr. think negroes should meet the physical force thrown at them by discriminating whites?

9. According to the United Muslims of America, what is the worst kind of slavery?

10. What were the people at the Million Man March supposed to do right after they took the pledge?

11. What's the spirit behind the last line of the poem recited at President Clinton's first inauguration?

12. Describe two habits of Nelson Mandela that show his serious dedication to achieving his goals.

13. Who knew by the age of 10 that he wanted to be a revolutionary?

Created January, 1996. Last revised January, 1998
By Tom March. tmarch@mail.sdsu.edu
Applications Design Team/Wired Learning
http://www.kn.pacbell.com/wired/BHM/hunt_questions.html

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Appendix HH

"My Brother's Keeper" Evaluation

"My Brother's Keeper" Evaluation

Directions: Answer each of the five questions below by circling either 1, 3, or 5. Then, write a sentence a two explaining why you gave yourself that grade.

1- NOT YET
3 - O.K.
5- WOW!

1. How well did I behave in class while working on this assignment? 1 3 5

2. How much effort did I put into this assignment? 1 3 5

3. Did I complete the assignment on time? 1 3 5

4. Are my drawings detailed and filled with color? 1 3 5

5. How well did I show my understanding of the novel? 1 3 5

Appendix II

English I - 3 Final Exam

English I - 3
Final Exam
Mrs. Szynal
Mr. Lewers
Mr. Sanders

Make sure all of your writing is neat and legible. Complete all of the assigned tasks.

Part I: The Short Story

Read one of the following stories:

"The Adventure of the Man With the Twisted Lip"
"The Adventure of the Blue Carbuncle"
"The Adventure of the Six Napoleons"

(10 pts.) A. Using the attached "Plot Diagram," graph the plot of the story. Include only the major events that occur.

(10 pts.) B. Using the attached "Personality Chart," describe each character's personality traits. Provide proof from the story for each trait.

(10 pts.) C. Using the attached "Quiz" sheet, write 10 open-ended questions that require the reader of the story to make inferences about what happened. Write the answers to the questions.

(10 pts.) D. Complete the "Story Analysis" sheet.

Part II: The Paragraph

This semester you have studied and practiced various communication skills that will be needed in further education and in your careers. In a well-organized paragraph, discuss which three skills are of greatest importance to you. Be sure to explain why each will be of value.

(10 pts.) Completion of the attached prewriting sheet.
(10 pts.) Completion of the written paragraph on your own paper

Part III: *Module 1: Communicating in the Workplace* Assessment

(20 pts.) Using the provided Scantron, answers all assessment questions.

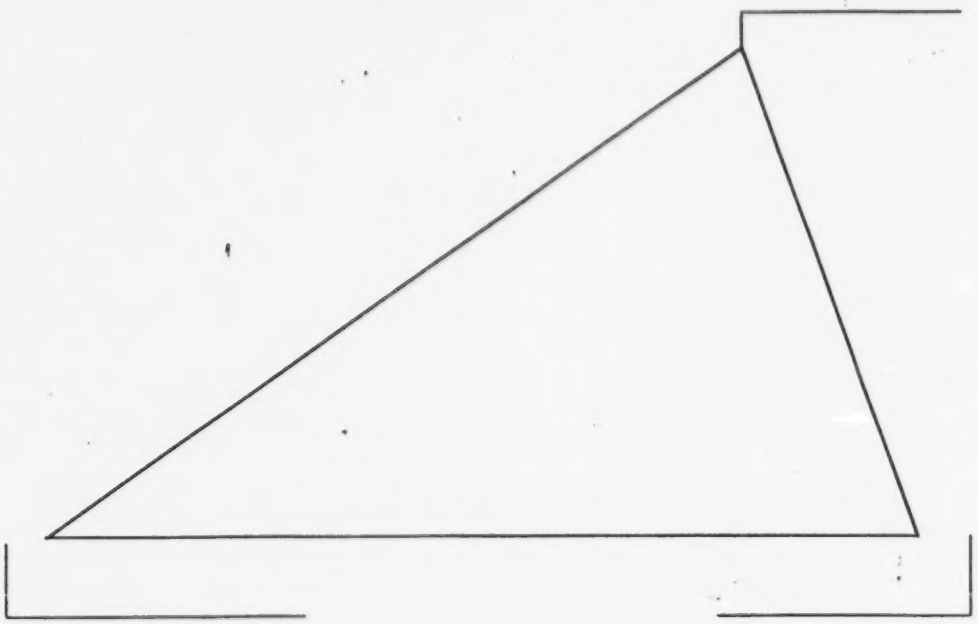
English I - 3 Final Exam (continued)

Plot Diagram

Name of Story_____

Author_____

Graph the major elements of the plot of the story on the diagram below.



English I - 3 Final Exam (continued)

PERSONALITY CHART

Title of Story: _____.

Author: _____

I. Who are the major characters in the story? _____

_____

_____

_____

II. Who are the minor characters in the story? _____

_____

_____

_____

III. Complete the following extended T-chart for each of the major characters in the story.

Character	Personality Trait	Proof

English I - 3 Final Exam (continued)

English I - 3
Final Exam

QUIZ

Questions

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Answers

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

English I - 3
Final Exam

Story Analysis

1. From this story I learned...

2. One thing I want to tell you about this story is...

3. When I look at this assignment,

I like...

I would improve

English I - 3 Final Exam (continued)

Prewriting!

The Expository Paragraph

SUBJECT: ***Three communication skills of greatest importance to me.***

PREVIEW (SKILLS)	SUPPORT (REASONS - WHY'S)	ELABORATION

NOW WRITE THE PARAGRAPH USING YOUR OWN PAPER!

Appendix JJ

Cooperative Lesson: Native American Literature

COOPERATIVE LESSON

NATIVE AMERICAN LITERATURE

Anticipatory set: (Questions discussed in class - identified problems)

1. What do we know about Native Americans? (Distributed KWL at this point to cooperative groups.)
2. Who are they?
3. Where did they come from?
4. How long ago did they arrive?
5. How have they influenced our lives?
6. What have we learned from them?
7. How advanced were they prior to the arrival of European explorers?
8. What kind of literature (oral at first) did they have? Poetry, songs, myths, government type ideas?)
9. What should we have learned from them? Are we learning anything today?
10. Where are the Native Americans? What are the problems?

Objective: To learn about Native Americans, especially as their culture is reflected in literature

Input:
1. Newsweek article xeroxed and distributed to students to read and list ten main ideas in cooperative groups
2. Creative literature from Walum Olum of the Delaware tribe - creation of the universe and man myth
3. Creation myth research
4. Indian poetry

Interventions:

1. Cooperative groups
2. Multiple Intelligences addressed through the activities
3. Journals/Reflections
4. Graphic Organizers
5. Authentic Assessment/Wrap Up
6. Mrs. Potter's Questions

Cooperative Lesson: Native American Literature (continued)

THE KWL

Topic: _____

Know	**W**ant to know	**L**earned

Cooperative Lesson: Native American Literature (continued)

Map of the Original Habitats of the Important Indian Tribes of the United States

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Appendix KK

Cooperative Lesson: Creation Myth

COOPERATIVE LESSON
CREATION MYTH

Anticipatory set:

After completing the Walum Olum creation myth reading, answerering written questions in cooperative groups, and discussing the pictographs, I asked what they thought other cultures might have written. We brainstormed, discussed known ideas, etc. I asked how we might find information about various creation myths to learn how they differed from one another, how developed or primitive they might have been, easy or difficult to understand the concepts, still a part of the culture today, etc.

Objective: To understand a culture through its literature (Native American and other world cultures)

Input: The Walum Olum creation myth as an example and introduced the procedure for research on the project before going to the library

Checking for Understanding:

Discussed the procedure in class -
vounteers to confirm answers to when, how, and where we would do the research

Guided Practice:

Students formed informal pairs
Sources on a cart - I discussed and guided their use.
Worksheets - distributed to students and explained their use for recording information and using as notes for written and oral pair presentations

Unguided Practice:

For two days in the library the students worked in pairs reading and recording the creation myths with main ideas and details to explain their beliefs.

Closure:

Oral pair presentation and later a Venn diagram (A pair of students prepared a diagram by charting their original pair's information about their creation myth.)

Appendix LL

American Indian Research Project

Name _____
Period

INDIANS OF NORTH AMERICA

Tribes

Algonquin	Cheyenne	Nez Perce
Apache	Chippewa	Potawatomi
Blackfoot	Iroquois	Pueblo
Cherokee	Navajo	Sioux

PART I

1. Name of tribe chosen _____
2. Location of the tribe _____
3. Reservation location and size _____
4. What type of buildings were used by this tribe? _____

   _____
5. Describe marriage and family customs. _____

   _____
6. Describe or draw the clothing worn by Indians in this region.

   _____
7. What crafts were produced? _____
8. What weapons were used? _____
9. What foods were eaten by Indians in this region? _____

   _____
10. What crops did they raise? _____
11. What animals did they hunt? _____

    _____

PART II

12. How did they travel? _____
13. What games did they play? _____

    _____
14. What language did they speak? _____

American Indian Research Project (continued)

15. Was it written? _____

16. What is known of their literature? _____

_____

17. Did they trade with other tribes? _____

18. If so, with which tribes? _____

19. What kinds of ceremonies did they hold? _____

_____

20. Describe medical treatments used. _____

_____

21. How was the tribe organized? _____

_____

22. Name a famous leader of this tribe and tell why he was famous.

_____

_____

_____

Sources used:

1. Author _____

   Title _____

   Call number _____

   Publisher _____

   Date of publication _____

2. Author _____

   Title _____

   Call number _____

   Publisher _____

   Date of publication _____

American Indian Research Project (continued)

Name _____

Period _____

Date _____

American Indian Research Project

_____ 1. Library research - on task (50)

_____ 2. Research work - note cards and bibliography cards (50)

_____ 3. Project worksheet completed (50)

_____ 4. Written composition - information written as an essay (100)

_____ 5. Oral presentation (50)

American Indian Research Project (continued)

Name of Presenter _____ Name _____

Tribe _____ Period _____

Date _____

Presentation Evaluation

Attention Getter

Introduction (leads smoothly into info.)

Good information

Well organized (easy to follow)

Visual Aid (relates well to info. presented)

Conclusion (smooth exit from body to end the presentation)

Poise (presenter in control of his/her material)

Total _____

Comments: (Helpful Only)

Most interesting information about the tribe:

Appendix MM

"Colors Of The Wind" Writing Activity

COLORS OF THE WIND

VOCAL by JUDY KUHN
MUSIC by ALAN MENKEN
LYRICS by STEPHEN SWARTZ

You think I'm an ignorant savage
And you've been so many places
I guess it must be so
But still I cannot see
If the savage one is me
How can there be so much that you don't know?
You don't know...

You think you own whatever land you land on
The erth is just a dead thing you can claim
But I know ev'ry rock and tree and creature
Has a life, has a spirit, has a name

You think the only people who are people
Are the people who look and think like you
But if you walk the footsteps of a stranger
You'll learn things you never knew you never knew

Have you ever heard the wolf cry to the blue corn moon
Or asked the grinning bobcat why he grinned?
Can you sing with all the voices of the mountain?
Can you paint with all the colors of the wind?
Can you paint with all the colors of the wind?

Come run the hidden pine trails of the forest
Come taste the sun-sweet berries of the earth
Come roll in all the riches all around you
And for once, never wonder what they're worth

The rainstorm and the river are my brothers
The heron and the otter are my friends
And we are all connected to each other
In a circle, in a hoop that never ends

How high does the sycamore grow?
If you cut it down, then you'll never know

And you'll never hear the wolf cry to the blue corn moo
For whether we are white or copper-skinned
We need to sing with all the voices of the mountain
Need to paint with all the colors of the wind
You can own the earth and still
All you'll own is earth until
You can paint with all the colors of the wind

Colors Of The Wind Writing Activity (continued)

"Colors of the Wind" Questions

Answer the following questions on your own paper.

1. What point is Pocahontas making in stanza one?
   a. What does she say the settlers think about the Native Americans?
   b. Why should the settlers supposedly know more than the Native American?
   c. What does she think they are perhaps?
   d. Why is the last line a repeated idea from line 6?

2. What does Pocahontas say the settlers view of land is?
   a. How does that view contrast with the Native American's?
   b. How does Pocahontas convey the difference between their attitudes by the words she uses such as _____? Explain.

3. What point is made in stanza 3?
   a. How is the view of the settler narrow?
   b. How could they broaden their view? Be specific.

4. How is stanza 4 connected in idea and in support of stanza 3?
   a. What are the four specific examples she uses? (shortly summarize each.)
   b. How are the examples imagry?
   c. What is an example of personification in this stanza?
   d. Why are the last two lines repeated?

5. What point is Pocahontas making in stanza 5 about the interests of the usual settler?
   a. What images are used to support the idea?
   b. What is the difference between the Indians and settlers values?

6. In stanza 6 Pocahontas sings of "a hoop that never ends."
   a. How is this a visual image?
   b. What does she mean?
   c. What are two examples of metaphors used in this stanza?

7. How does Pocahontas make a plea to save the environment?

8. How does the last stanza complete the idea in stanza 7?
   a. To which two senses are the images in line 1 appealing?
   b. What is the meaning of lines 3 and 4?
   c. What do lines 5, 6, and 7 mean?

9. What are the "colors of the wind"?

10. What is the theme (main idea) of this poem?

Appendix NN

Early Explorers Writing Activity

EARLY EXPLORERS

CABEZA DE VACA, ROBERT DE LA SALLE, AND JOHN SMITH

Describe and react to the particular event or aspect of each journal and letter you found interesting, exciting, and/or informative. What would you have done in each event?

Be specific and explain your answers and reactions in five to eight sentences for each.

Appendix OO

Math Anecdotal

In the beginning, all the interventions except cooperative learning and the math computer lab made me feel a little uncomfortable. I had to figure out how I was going to approach them and incorporate them into my algebra classes. It seemed that as I began each intervention, I would make needed adjustments on a daily basis until I felt the intervention was being used to its maximum potential.

By the middle of the first quarter, I had all the interventions up and running. I was excited, exhilarated! My action plan to use multiple intelligences to increase reading comprehension in math had been put into operation. I was enjoying myself. Would the interventions work? I surely hoped so. But even if they didn't, I was still having fun, a very welcome needed change in MY life!

The end of a semester is not a "pretty thing" no matter how you look at it. Students' and teachers' emotions are "raw" for the lack of a better word. The students are ready for a change, and the teachers are desperately trying to finish teaching their curriculum before final exams. In the midst of all this, all interventions were continued until the post test. We made it! I must give credit to my students for hanging in there and supporting me by participating in all the interventions with so much enthusiasm. I was completely overwhelmed!

Appendix PP

Freshman English Anecdotal

Implementing multiple intelligences and cooperative learning into my classroom was a struggle, but looking back on the success I had this year, I realize these strategies were effective. Two apprehensions I had were noise in the classroom and students' movement.

Multiple intelligence lesson plans are not easy to design, yet they are highly effective with my at-risk students. At first I was reluctant to teach in this fashion because I felt as though I was being childish in a high school setting, and I was worried about watering-down the material. I did not like the idea that my students were drawing pictures and creating songs. I felt they were not learning the core material presented them. At first cooperative learning was producing the same student problem behavior as my more traditional methods because the students were moving about the room, "cheating" off one another, and talking about everything except the class subject matter. These activities caused concern when I began each lesson. As a result of these feelings, I developed rubrics for all the assignments and did what I called "Teacher Modeled Behavior" so the students understood what cooperative learning looked like. This helped modify their social behavior which made cooperative learning a learning experience all around.

In retrospect, I would have done things differently. For example, before cooperative learning is introduced to the students, I would first present a lesson on social behavior and etiquette. As a result, students will know what it means to follow the DOVE rules for cooperative learning. In addition, before assigning a multiple intelligence lesson I would explain to the students the various ways they can be smart. Through doing this students will not think of the activities as just "fun" and/or "time filler" activities. Instead they will

Freshman English Anecdotal (continued)

realize they are demonstrating their knowledge in the way they feel best represents their intelligence.

Looking over the past academic year, my students benefited from the lessons designed for them using both cooperative learning and the multiple intelligences. When I walked around the room in my lower level class, those enrolled in a pre-high school course, I could hear insightful conversation taking place. My views and perception about these two types of teaching and learning have changed my teaching style. I have always preached to my students to take responsibility for their own learning, but it wasn't until now that I realize I haven't given them the opportunity to do this. These methods allow the students to do what I have always been asking them to do.

Appendix QQ

Sophomore English Anecdotal

At the beginning of the intervention, I was quite nervous. I had received training on the multiple intelligences; I had seen successful examples of their use; and I had even experimented with them in my own classroom. But now I had to be held accountable for incorporating them into the daily schedule of my teaching, and into the daily learning of my students. Fortunately, my fellow researchers were in similar predicaments. They too were not only excavating foreign materials from various sundry sources but also developing immediate means by which to implement them, sometimes more successfully than others. The problem was that I was worrying too much about the end result. I was always trying to create the big picture instead of focusing in on the specific snapshots which would become more of a collage in the end.

As the intervention progressed, things became much different for me and my students. The multiple intelligence atmosphere began to click. As the students began to discover their own strengths and weaknesses in learning, I made many similar discoveries about my teaching. I found that I needed to strengthen my own weak intelligences in order to target those particular intelligences for my students. I wasn't afraid to admit my weaknesses to my students and fellow researchers either because we were in this together. We were all searching for ways to improve reading comprehension in the classroom by relying on multiple intelligence strategies.

By the end of the intervention, I had little worry about the success of the research because I was already witnessing undoubted success in my students. They became so used to the multiple intelligence atmosphere that they often complained when I deviated from it for the purposes of direct instruction and review. Most of my students became much more autonomous in their learning;

Sophomore English Anecdotal (continued)

as a result, the more self-governed they became, the less "traditional teaching" I had to do. In all of my experience as a teacher, I have never seen students so actively participating in their learning. I sincerely believe that this is surely due to the multiple intelligence intervention because this type of teaching allows students to personalize their learning instead of the learning being personalized by others, particularly educators.

Appendix RR

Junior English Anecdotal

Interventions such as cooperative learning, teaching through the multiple intelligences, graphic organizers, journaling, authentic assessment, and positive discipline seemed to offer strategies I needed to address the special needs of my rapidly changing, increasingly challenging students. Interest in academics and self-motivation was lacking in too many of my students. Adding to their waning interest in academics, a lack of respect for authority and empathy for more studious classmates, a more heightened need for power, belonging, and an ever-growing need for fun were causing discipline problems in greater numbers and intensity. I needed more strategies to reach my students.

During the first week of September, I organized my students into cooperative groups after a few days devoted to a get-acquainted exercise which was very successful in adjusting the students to the beginning of a back-to-school routine. The groups brainstormed general rules and social skills needed for a successful learning environment. They eagerly composed lists of rules which showed they really wanted cooperation and limits. At the end of the second week, I introduced journaling and asked the students to write an entry about their plans for success in English. They were told they would reflect their progress frequently during the semester. The journal entries were enlightening as the students revealed an interest in improving various skills in English, including composition writing techniques and reading comprehension. That was certainly encouraging because, of course, this was to be the objective of the interventions I would be using to guide their learning. We were off to a great start!

Cooperative groups and journaling continued to be emphasized as the

Junior English Anecdotal (continued)

students began working on various units of study. During the first unit I used graphic organizers in cooperative learning groups to engage interest and direct their thinking. They really enjoyed using the organizers because they gave them the opportunity to interject their own ideas and talk with classmates to form answers. Their positive involvement with each other gave me the opportunity to talk with students in small groups or with individuals. I did, however, have to remind them to stay on task. Loud talking was also a problem; they needed encouragement to modify their voices. After a cooperative learning project, they also needed to be reminded they should not expect to be able to talk as though they were in cooperative groups, especially on days when they were expected to complete some individual assignments, such as silent reading. As units were completed, I used authentic assessment to evaluate their learning. The results were encouraging because their responses revealed learning I would not have been able to assess with more traditional testing. They demonstrated knowledge of the subject matter as well as insights based on their own experiences and understanding. The first assessment was a pleasure to read, and they happily received good comments and correspondingly high grades for their efforts. Even the test-taking atmosphere had been more relaxed because they were feeling successful as they wrote their responses. Seemingly they were learning more than merely the subject matter in the assigned reading.

As the semester continued, the students completed other tasks with the inclusion of the multiple intelligences. One of the most successful and enjoyable activities included in cooperative group creations of a poem and graphics to correspond with an event in the novel they were reading. This activity allowed further interaction with my students and was an opportunity

Junior English Anecdotal (continued)

for many students to demonstrate less frequently used creative skills. Again, the students were engaged in learning and really were excited about their results as I photographed the posters with their proud creators. Another particularly effective activity was an oral presentation of each group's assignment to support the innocence or guilt of a character on trial. Their presentations were not only very complete, but they entered into the verdicts with much enthusiasm! They really enjoyed the change of pace and the unique opportunity to present their judgments. At the end of the semester I included a reflection on their learning and on the procedures, strategies, and interventions used. Their responses were very favorable. They really enjoyed the activities, the opportunities to socialize while they learned, and the multiple intelligence interventions which allowed them to demonstrate their skills in several areas. Certainly the experience of observing engaged learning; more frequently completed assignments, and, therefore, higher grades; seeing the results of artistic and verbal creativity; and knowing the students became involved in the assigned work was very positive. These observations reaffirmed my early eagerness to include these interventions.